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1943

TM5-4084

WAR DEPARTMENT TECHNICAL MANUAL

U.S. Dept.



**DRILL, PNEUMATIC,
PORTABLE, ROTARY,
 $\frac{9}{16}$ " CAPACITY, THOR
No. 253X, MODEL 4444,
WITH STAND, DRILL,
THOR, No. 26**

DISTRIBUTION.—This is a reprint for stock only of TM 5-4084, Maintenance Manual and Parts Catalog: Drill, Pneumatic, Portable, Rotary, $\frac{9}{16}$ " Capacity, Thor No. 253X, Model 4444, with Stand, Drill, Thor, No. 26, November 1943.

WAR DEPARTMENT • NOVEMBER 1943

WAR DEPARTMENT TECHNICAL MANUAL

TM 5-4084

DRILL, PNEUMATIC, PORTABLE,

ROTARY, $\frac{9}{16}$ " CAPACITY, THOR

No. 253X, MODEL 4444, WITH

STAND, DRILL, THOR, No. 26



WAR DEPARTMENT

NOVEMBER 1943

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WASHINGTON 25, D. C., 30 November 1943.

TM 5-4084, Drill, Pneumatic, Portable, Rotary, $\frac{1}{16}$ -Inch Capacity, Thor No. 253X, Model 4444, with Stand, Drill, Thor No. 26, is published for the information and guidance of all concerned.

[A. G. 300.7 (3 Sep 43).]

BY ORDER OF THE SECRETARY OF WAR:

G. C. MARSHALL,
Chief of Staff.

OFFICIAL:

J. A. ULIQ,
Major General,
The Adjutant General.

DISTRIBUTION:

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All service problems and repair parts orders are to be referred to Independent Pneumatic Tool Company, Chicago, Illinois, or any of the branch offices listed below.

INDEPENDENT PNEUMATIC TOOL CO.
600 W. Jackson Blvd.,
Chicago 6, Illinois

BIRMINGHAM 4, ALA.
1411 Third Ave., N.

BOSTON 15, MASS.
78 Brookline Ave.

BUFFALO 2, N. Y.
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1740 E. 12th St.

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SALT LAKE CITY 1, UTAH
54 E. Fourth South

SAN FRANCISCO 3, CALIF.
315 S. Van Ness St.

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1741 1st. Ave., S.

TORONTO, ONT.
32 Front St., W.

LONDON, ENGLAND
40 Broadway, S.W.1.

FACTORIES: AURORA, ILLINOIS AND LOS ANGELES, CALIF.

Be sure to accompany your request with detailed information covering tool, giving: size number, model number, name, serial number.

GENERAL DESCRIPTION

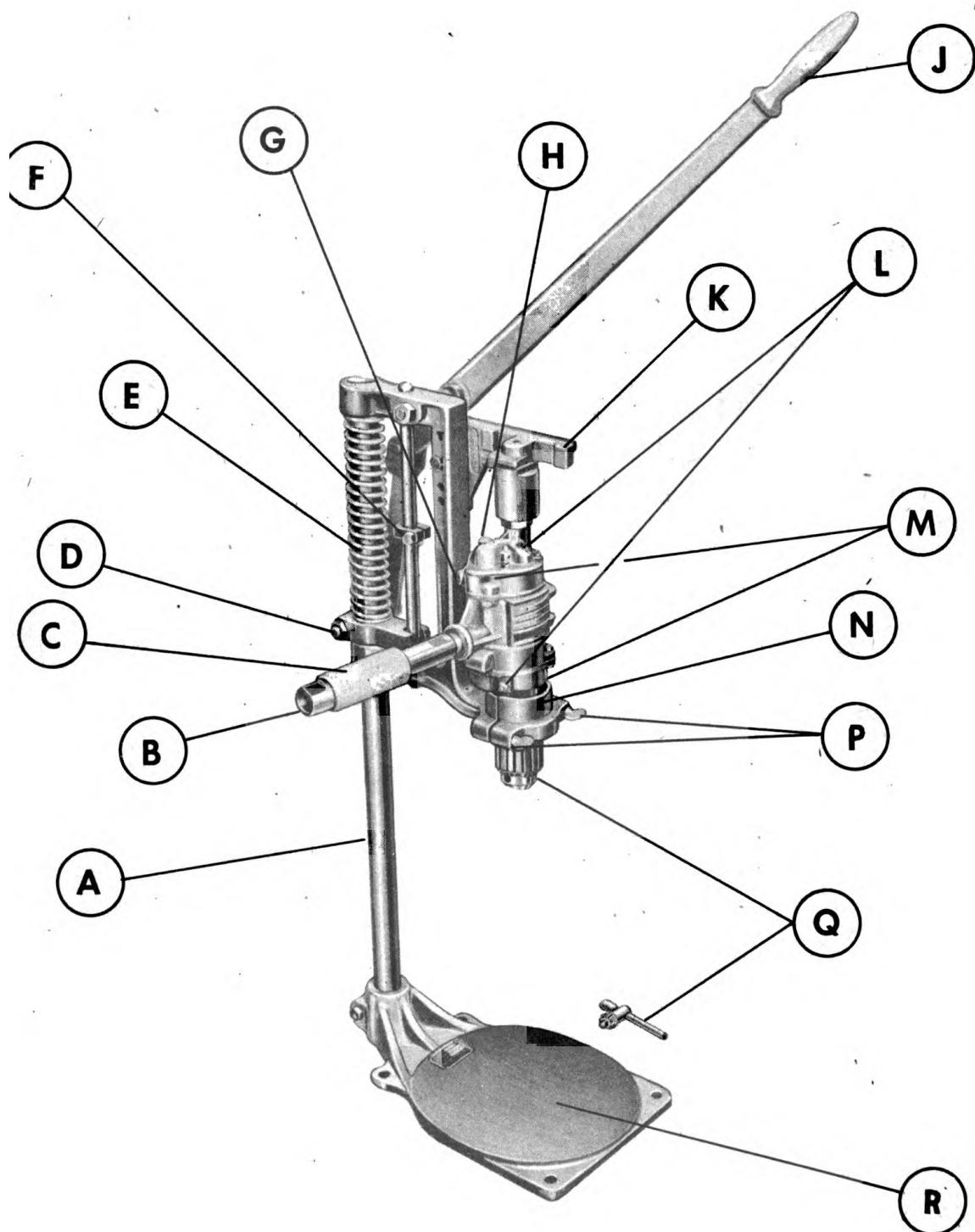
The Thor No. 253X Portable Pneumatic Drill, Model 4444, is powered by a rotary blade motor. It is designed to operate at a spindle speed of 700 RPM without load and to deliver its rated drilling capacity of 9/16" in steel with an air line pressure of 90 lbs. per square inch. Used with the No. 26 Thor Drill Stand, it can be converted from a portable machine into a stationary bench drill.

The Thor No. 253X Drill is equipped with a side throttle handle, 3-jaw Jacobs Chuck to accommodate up to 9/16" diameter straight round shank cutting tools and a dead handle which is used when the drill is not mounted in the drill stand.

SPECIFICATIONS

Thor No. 253X, Model 4444, Portable Pneumatic Drill

Capacity - Drilling	9/16"
Reaming.	5/16"
Tapping.	5/16"
Speed, without load	700 R.P.M.
Weight.	13-3/4 lbs.
Length Overall.	17 inches
Spindle Offset.	1-1/4 inches
Operating Air Line Pressure	90 lbs. per sq. in.
Size Air Hose Required.	1/2" I.D. (minimum)



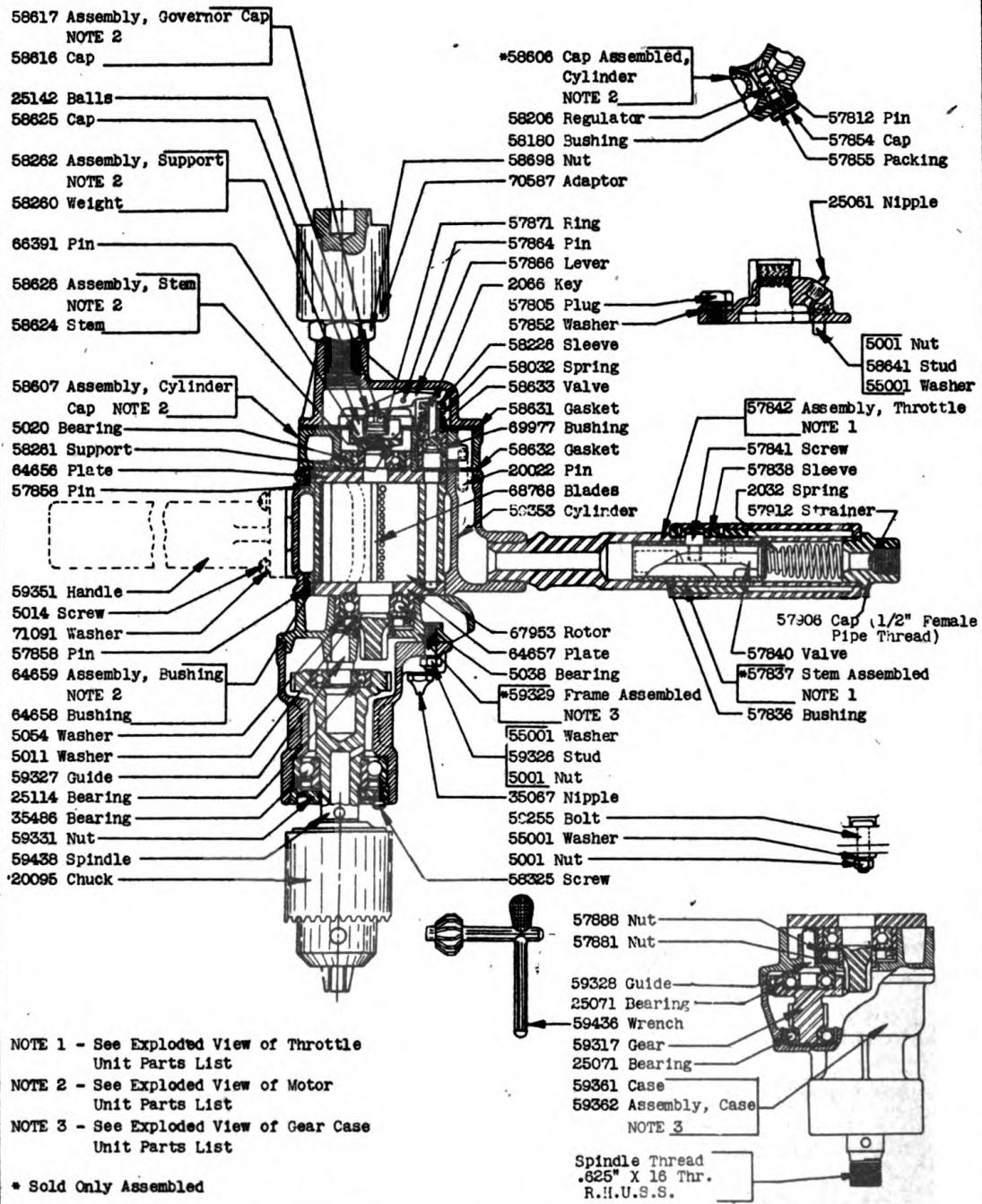
IDENTIFICATION OF MAJOR PARTS**Thor No. 253X Pneumatic Drill****with****Thor No. 26 Drill Stand**

- A. No. 64533 POST**—Vertical unit is positioned on this post.
- B. No. 57906 THROTTLE CAP**—for connecting air hose to drill by means of a $\frac{1}{2}$ " pipe thread Hose Nipple or Coupling. Throttle Cap contains air strainer.
- C. No. 57838 THROTTLE SLEEVE**—enables operator to start, stop and control speed of drill.
- D. No. 64534 SLIDE AND CLAMP**—adjusted up and down to position vertical unit along drill stand post.
- E. No. 64539 SPRING FOR SLIDE**—returns drill to original position upon release of No. 64536 Hand Lever.
- F. No. 64544 STOP GAUGE**—regulates drilling depth of drill. Upward adjustment of Stop Gauge on No. 64543 Guide Rod increases travel of drill; downward adjustment decreases drill travel.
- G. No. 57854 OIL REGULATOR CAP (round)**—retains oil regulator in oil regulator bushing.
- H. No. 57805 OIL RESERVOIR PLUG (hex.)**—removed to fill oil reservoir from which lubricant is supplied to oil regulator.
- J. No. 64536 HAND LEVER**—actuates vertical travel of drill to a maximum drilling depth of 5".
- K. No. 64541 UPPER SUPPORT BRACKET**—for adjusting drill into stand. Bracket is adjusted up and down on No. 64534 Slide and Clamp.
- L. Nos. 35067 and 25061 GREASE NIPPLES**—Lubricant for internal parts is applied with pressure grease gun through these fittings.
- M. VENT HOLES (2)**—permit escape of excess air pressure or grease from inside drill. Keep clear of obstructions.
- N. No. 70585 BUSHING**—holds drill in slide and clamp.
- P. No. 64809 THUMB SCREWS**—hold No. 70585 Bushing against No. 59362 Gear Case.
- Q. No. 20095 JACOBS CHUCK**—3-jaw type with 9/16" Capacity.
- R. No. 64532 BASE FOR DRILL STAND**—clamps to bench with 4 bolts.



INDEPENDENT PNEUMATIC TOOL CO.
CHICAGO, ILLINOIS
NO. 253X PNEUMATIC ROTARY DRILL
MODEL NO. 4444

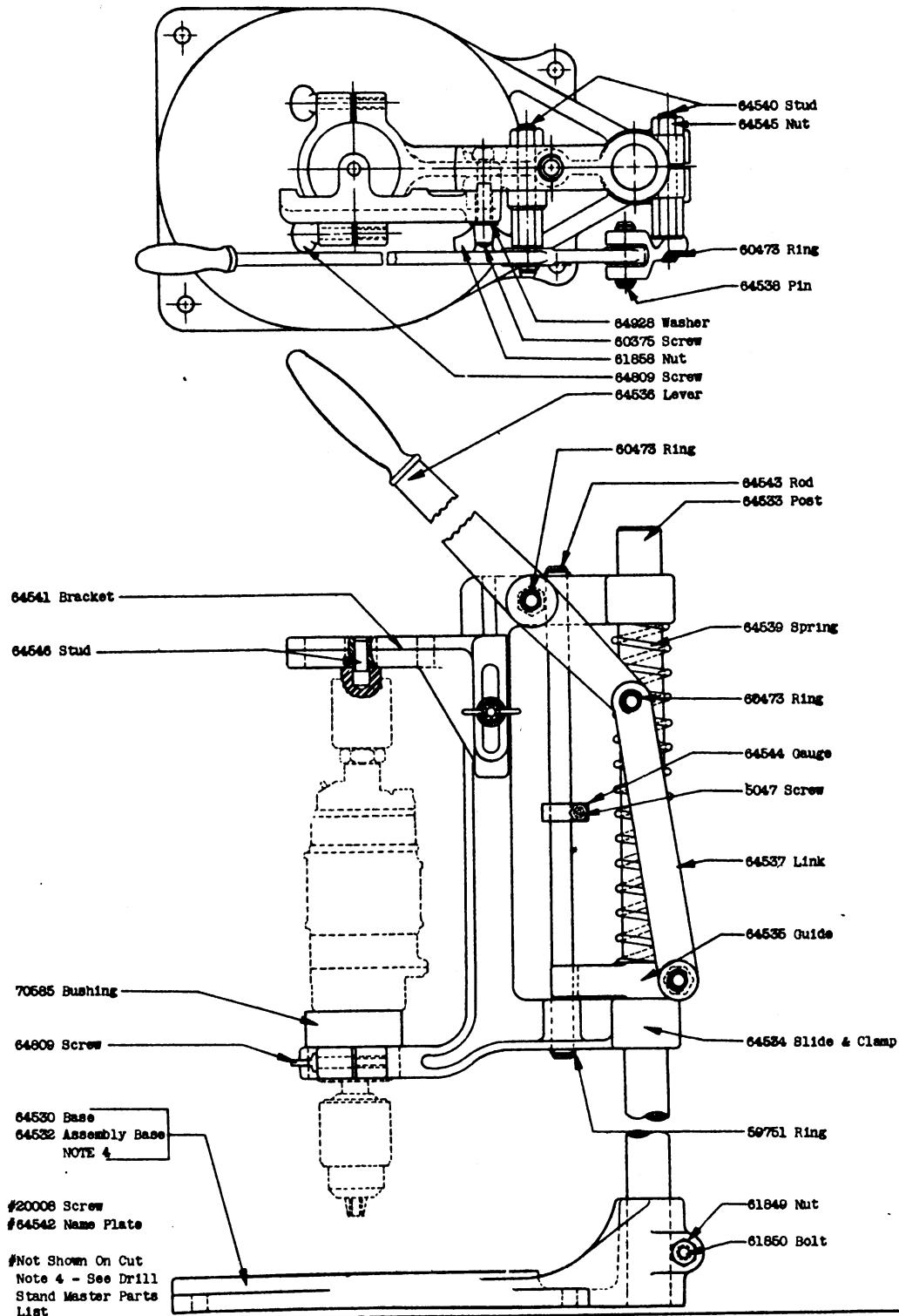
SPECIFY SERIAL NO. AND MODEL NO. OF TOOL WHEN ORDERING PARTS



Printed In United States of America



INDEPENDENT PNEUMATIC TOOL CO.
CHICAGO, ILLINOIS
NO. 26 DRILL STAND

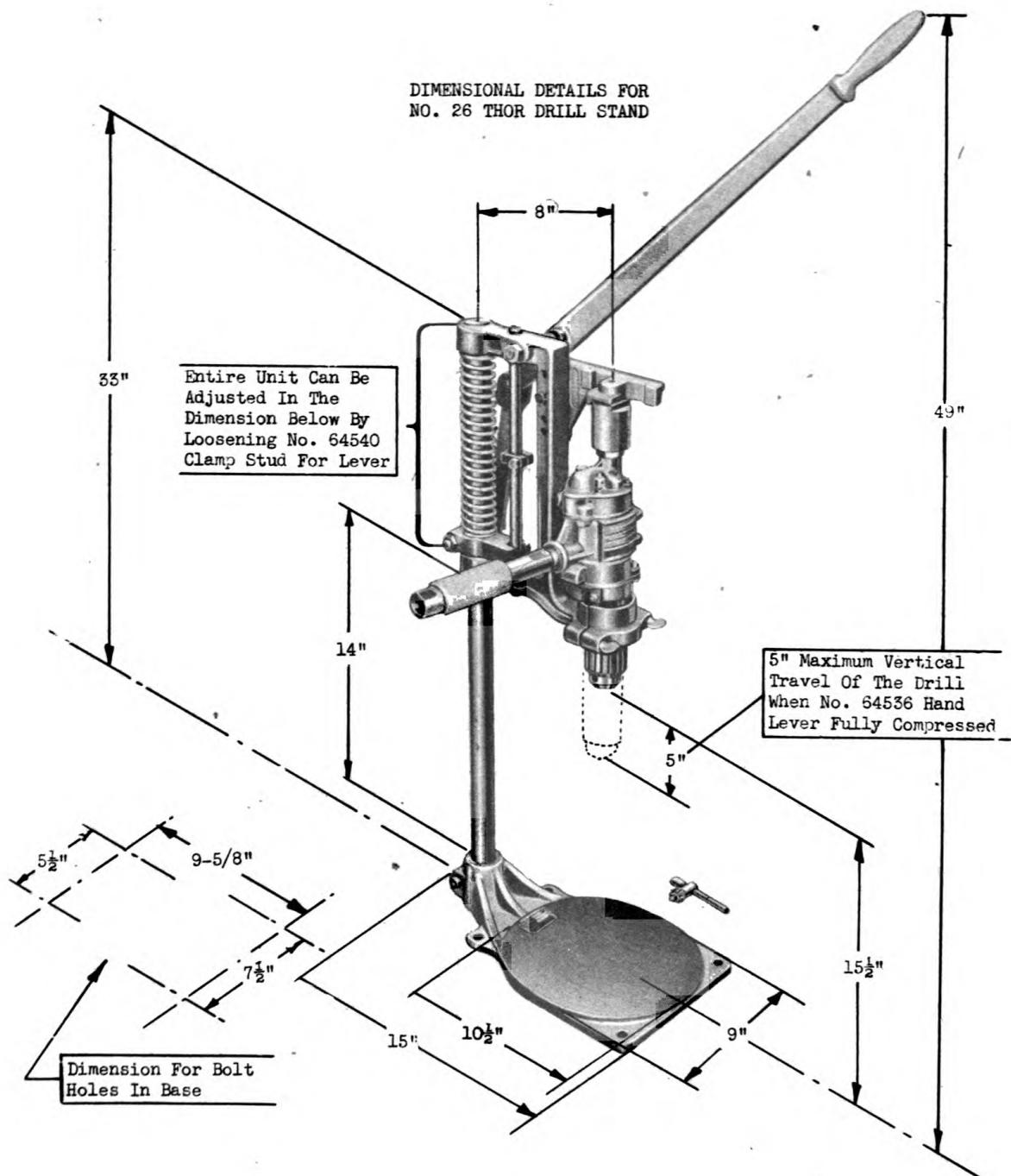


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WHAT TO DO

BEFORE STARTING DRILL

This drill was given a rigid operating test and final inspection before it was shipped from the factory. We recommend that you read and follow the procedure outlined below before starting and placing the machine in service.

PLACEMENT OF DRILL STAND AND DRILL

(See Illustration on pages **VIII** and **IX** to identify part numbers)

1. Bolt the No. 26 Thor Drill Stand down to a bench, table or other substantial base. (Use proper size bolts to hold stand securely.) See Illustration on Page X, Introduction.
2. Place drill, with No. 57842 Throttle Assembly to the left hand side, into No. 70585 Bushing, located in No. 64534 Slide and Clamp so that No. 59362 Gear Case Assembly rests on back half of No. 70585 Bushing.
3. Lower No. 64541 Bracket to engage it with No. 70587 Adaptor, located at top of drill.
4. See that the No. 64546 Stud in the Bracket enters the hole in the Adaptor.
5. Tighten the No. 61858 Thumb Nut securely.
6. Tighten the two (2) No. 64809 Thumb Screws to Clamp the No. 70585 Bushing against the No. 59362 Gear Case Assembly on the drill.

LUBRICATION

Oil Lubricant

1. Fill oil reservoir with proper grade of oil (See Lubricant Chart, page 6) (Note: Refill oil reservoir every 4 hours. NEVER ALLOW TO RUN DRY)
2. Apply small amount of OE-10 oil through air inlet opening in Throttle Control Unit. (See letter "C", Major Unit Identification, Page VI.)
3. Blow out air hose to remove water and dirt.
4. Connect air hose to air inlet of Throttle Control Unit.
5. Twist No. 57838 Throttle Valve Sleeve to the left to wide open position to flush oil through motor.
6. Turn drill off and check grease.

Grease Lubricant

1. Apply proper grade grease (see Lubricant Chart, page 6) with pressure grease gun sparingly through nipples on No. 58617 Governor Cap and No. 59362 Gear Case. (Two (2) Grease Nipples.)
2. Apply grease every 64 hours.

OPERATING AIR LINE PRESSURE

1. Check air pressure. Normal operating airline pressure is 90 lbs. per square inch.
 - (a) Lower pressure will reduce operating efficiency.
 - (b) Higher pressure will cause undue wear and requires that the operator be especially careful to have complete control of the machine.
2. See that 1/2" inside diameter air hose is used. This is essential to maintain a sufficient supply of air.
3. See that the two Vent Holes inside of No. 58607 Cylinder Cap Assembly and near top of No. 59362 Gear Case are clear of obstructions.

Connecting Air Hose to Tool

1. Always blow out the air hose before connecting it.
2. Blow off hose nipple to free any small particles of dirt, scale or other foreign matter lodged inside.
3. Check air strainer inside No. 57906 Throttle Cap to be sure it is clean.

Drill Bit Inspection

1. Inspect the shank end of cutting tool to be used.
2. Examine the entire bit for flaws.
3. Check all screws and nuts on machine to be sure they are tight.

Placing Bit in Chuck

1. The No. 20095 Jacobs Chuck is made with 3 jaws to accomodate straight round shank drills up to 9/16" in diameter and reamers up to 5/16" in diameter.
2. Clean the inside surface of the chuck jaws and the outside surface of the shank of the cutting tool.
3. Insert the shank of cutting tool into the chuck firmly.
4. Tighten chuck jaws with No. 59436 Chuck Wrench.

ADJUSTING DRILL STAND AND DRILL TO THE WORK

1. Loosen No. 64545 Clamp Stud Nut.
2. Slide entire vertical unit up or down along No. 64533 Post to position desired.
3. Position vertical unit on Post of Drill Stand so that point of cutting tool has about 1/2" clearance above work.
4. Tighten No. 64545 Clamp Stud Nut.

Setting Unit for Drill Depth

1. Loosen No. 5047 Screw.
2. Slide No. 64544 Stop Gauge up or down along No. 64543 Guide Rod to position desired.
 - (a) To increase the travel of drill, move the Stop Gauge UP.
 - (b) To decrease the travel of drill, move the Stop Gauge DOWN.

NOTE: Maximum vertical travel of the drill, with the No. 64536 Hand Lever fully depressed, is approximately 5 inches.

3. Tighten No. 5047 Screw in No. 64544 Stop Gauge to hold gauge at position when desired drilling depth is determined

GENERAL OPERATING PROCEDURE**When Using Drill in Drill Stand**

1. Place the material to be drilled firmly on base of drill stand with point that is to be center of the hole to be bored directly beneath point of cutting tool. (Material should be clamped to bench or base or held firmly by drillers helper)
2. Grasp the No. 57838 Throttle Sleeve with left hand and No. 64536 Handle Lever with right hand.
3. Pull down on the hand lever with right hand until the point of the cutting tool touches the material.
4. Open the throttle gradually by turning the No. 57838 Throttle Sleeve away from you (counter-clockwise). (Speed of the drill is controlled by the distance that the Throttle Sleeve is turned.)
5. Continue to apply pressure to the work by pulling down on the Hand Lever until desired drilling is completed.

6. Turn Throttle Sleeve toward you to full OFF position. (Clockwise)
7. Release Hand Lever to free cutting tool from the work. (The No. 64539 Spring returns the drill to its original position upon release of hand lever.)
8. Remove work from base of drill stand.

When Using Drill out of No. 26 Drill Stand

If desired, the No. 253X Drill may be used as a portable tool by removing it from the No. 26 Drill Stand and attaching the No. 59351 Dead Handle.

To remove Drill from Drill Stand

- (a) Loosen No. 61858 Thumb Nut
- (b) Raise No. 64541 Bracket to disengage No. 64546 Guide Stud from No. 70587 Adaptor.
- (c) Loosen the two (2) No. 64809 Thumb Screws.
- (d) Lift drill out of No. 70585 Bushing.

To Use the No. 253X Drill as a portable tool

1. Attach No. 59351 Dead Handle to Gear Case on side opposite Throttle Handle by means of the four (4) No. 5014 Cap Screws.
2. Grasp the Throttle Sleeve with one hand and the Dead Handle with the other.
3. Place the point of the cutting tool to the position which is to be the center of the hole to be bored.
4. Open the throttle gradually by turning the Throttle Sleeve gradually in a counter-clockwise direction.
5. Exert effort against the tendency of the machine to rotate.
6. Never tilt the cutting tool from the direction in which the hole is being bored.
7. Should the cutting tool become stuck, TURN OFF the drill and work the tool free before again applying power.
8. When hole is bored to desired depth, turn off the machine and remove cutting tool from work.

FIELD SERVICE OPERATIONS

The following minor servicing jobs should be done in the field occasionally by the machine operator to insure the most efficient operation of the drill and to prevent unnecessary wear or breakage caused by neglect of the machine.

Cleaning Oil Regulator Plunger

1. After each 48 hours of actual operation, remove the No. 57854 Oil Regulator Cap (located on the side of No. 58607 Cylinder Cap Assembly).
2. Remove No. 58206 Oil Regulator Plunger from No. 58180 Bushing.
3. Clean plunger in solvent.
4. Replace plunger and cap.

Servicing Throttle Parts

1. When operating drill, apply OE-10 oil every four hours to Throttle Parts through small hole located in the No. 57838 Throttle Sleeve when at "OFF" position.

FIELD LUBRICATION

Proper and sufficient lubrication is the most important single factor in keeping performance of the drill at a maximum and repairs at a minimum.

Oil Lubrication

1. Remove No. 57805 Oil Reservoir Plug (Hex.) located in No. 58617 Governor Cap Assembly. When replacing No. 57805 Plug, be sure No. 57852 Plug Washer is complete and not leaking air.
2. Apply proper grade of oil through Oil Plug Hole to fill Oil Reservoir.
3. Apply proper grade of oil through small oil hole in No. 57838 Throttle Sleeve.

Grease Lubrication

1. Apply proper grade of grease lubricant through the two (2) Grease Nipples with a high pressure grease gun every 64 hours. (No. 25061 Grease Nipple is at upper end of drill in No. 58617 Governor Cap; No. 35067 Grease Nipple is at lower end of drill in No. 59362 Gear Case.)

LUBRICATION SPECIFICATIONS

	Temperatures	U. S. Army Symbol
Oil	Below 32° F.	OE-10 (oil, engine, SAE-10)
	Above 32° F.	Mixture of Equal amounts of OE-10 and OE-30 oils. (oil, engine, SAE-10 and SAE-30)
Grease	Below 32° F.	CG-0 (grease, general purpose, No. 0)
	Above 32° F.	CG-1 (grease, general purpose, No. 1)

Always use clean lubricant. Under no circumstances should old crank case oil be used.

Oil or Grease which has been standing in an open container collecting dust and dirt should not be used.

EXTREME WEATHER CONDITIONS

Hot Weather Operation

The No. 253X Drill will operate in extreme high temperatures without adjustment.

1. Lubrication - particular care should be given that proper grade lubricant is used.
2. Check lubrication frequently.
3. Keep parts clean.
4. Check air strainer to assure against accumulation of dirt.

Cold Weather Operation

1. Follow all ordinary service operations.
2. Be sure proper grade oil and grease is used.

PLACING DRILL IN STORAGE

When the drill is not to be used for a period of time, it should be stored in a dry and protected place. The following procedure should be followed when the unit is placed in storage.

1. Pour a small amount of solvent into the air inlet opening in the throttle control unit, connect the air hose and operate the machine for a short period.

2. Pour a liberal amount of OE-10 oil into the air inlet and operate the machine in the same manner as above.

NOTE: It is imperative that the drill be flushed with oil immediately after cleaning.

3. After flushing as above, wedge a cloth plug into the No. 57906 Throttle Cap opening and the Exhaust Opening to prevent entry of dust and dirt when machine is in storage.

MEMORANDA

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SUMMARY OF SERVICING OPERATIONS

Proper and complete maintenance and servicing of the No. 253X Drill requires thorough inspection, cleansing and lubrication of each and every part at least once every 2048 hours. If the drill is used continuously, the servicing job should be done more frequently.

1. To accomplish the above procedure, each unit assembly should be disassembled into its component parts. (A unit assembly is a group of parts assembled together to perform a definite function in the operation of the machine.)
 - (a) Thoroughly inspect each part for worn bearing surface as well as for corroded sections.
 - (b) If the part is badly worn and beyond repair, it should be replaced.
 - (c) Assembly of new parts in conjunction with badly worn parts may cause rapid failure of both parts.
2. (a) Thoroughly clean each part in a dirt and grease cutting solvent.
(b) Lubricate the separate parts with OE-10 oil.
(c) Reassemble parts to complete the unit assembly.
3. All unit assemblies, each having been properly serviced, may then be assembled together to complete the final assembly of the Drill.

GENERAL INFORMATION

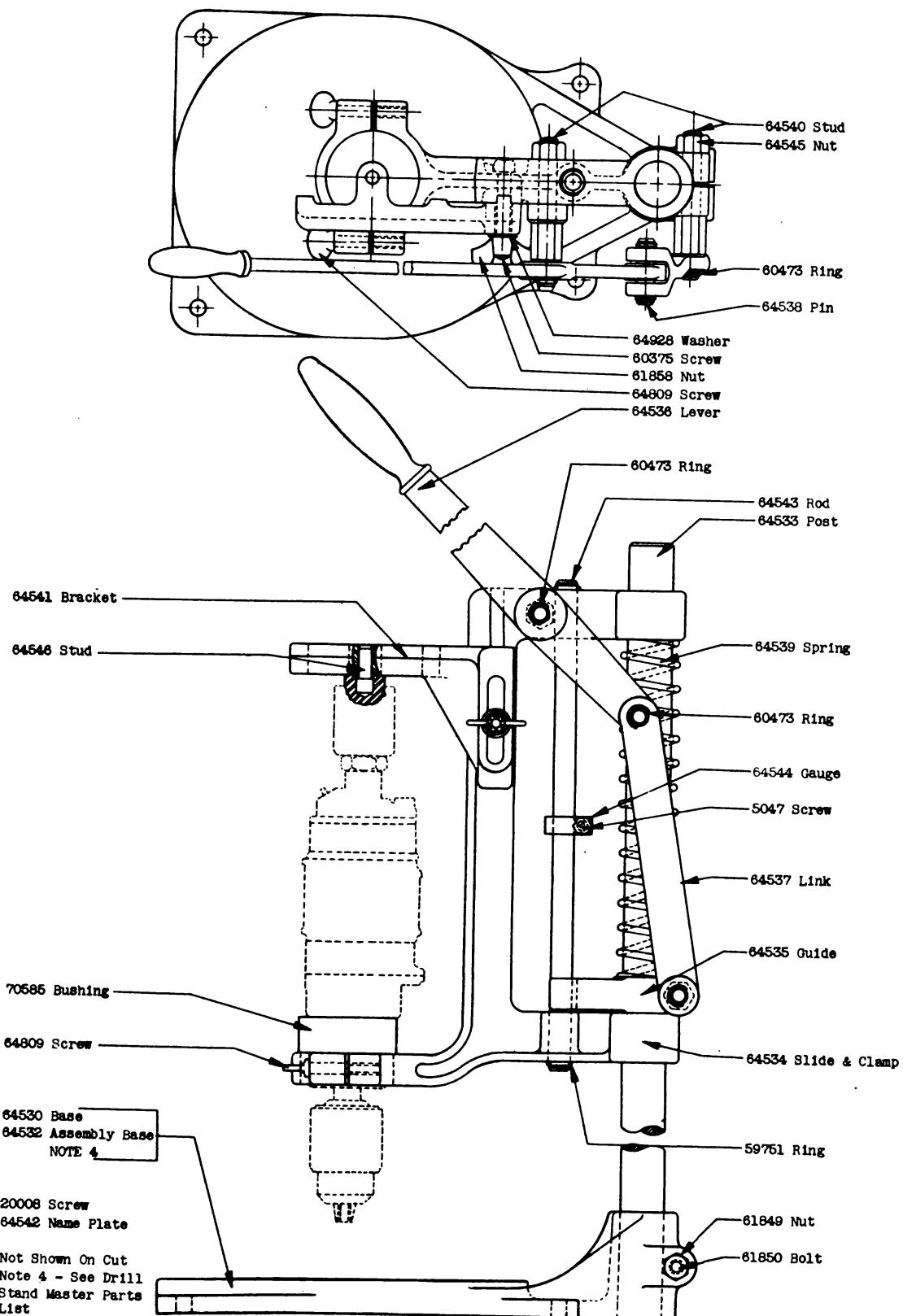
When reading the following instructions, refer to the exploded views as well as to the cross sectional drawings of the assembled tool for further information regarding the appearance or design of each part and its relationship with the parts adjacent to it.

REMOVAL OF DRILL FROM DRILL STAND

(See illustration on pages 10)

1. Loosen No. 61858 Thumb Nut for Upper Bracket Clamp Bolt.
2. Raise No. 64541 Bracket to disengage No. 64546 Guide Stud from No. 70587 Adaptor in top of Drill.
3. Loosen the two No. 64809 Thumb screws.
4. Lift Drill out of the No. 70585 Bushing.

DRILL STAND



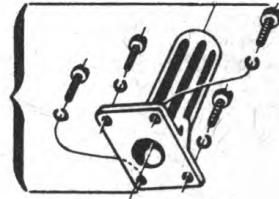
MAJOR UNIT IDENTIFICATION

The Thor No. 253X Drill may be divided into three major unit assemblies or part groups:

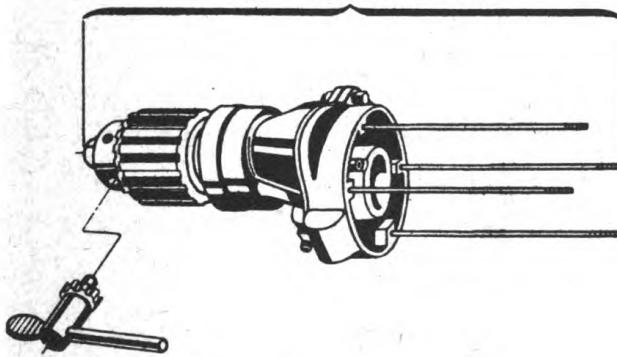
- (a) Throttle Handle Unit - consists of all parts pertaining to operation of the throttle.
- (b) Motor Unit - consists of dead handle, governor cap assembly, cylinder cap assembly, cylinder assembly and all other parts which assemble to complete the motor unit.
- (c) Gear Case Unit - consists of spindle and gear as well as other parts assembled in the gear case.

These classifications are based on the manner in which the servicing operations should proceed. Disassembling and reassembling operations as well as the necessary servicing instructions pertain to each major unit as described herein.

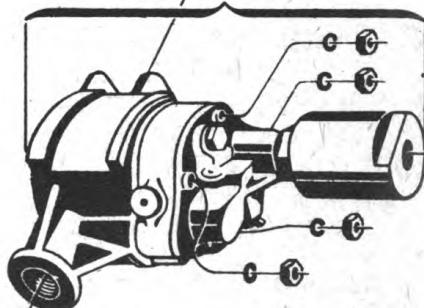
NOTE: DEAD HANDLE MAY BE USED TO HOLD DRILL WHEN OPERATING WITHOUT THOR NO. 26 DRILL STAND



GEAR CASE UNIT



MOTOR UNIT



THROTTLE UNIT

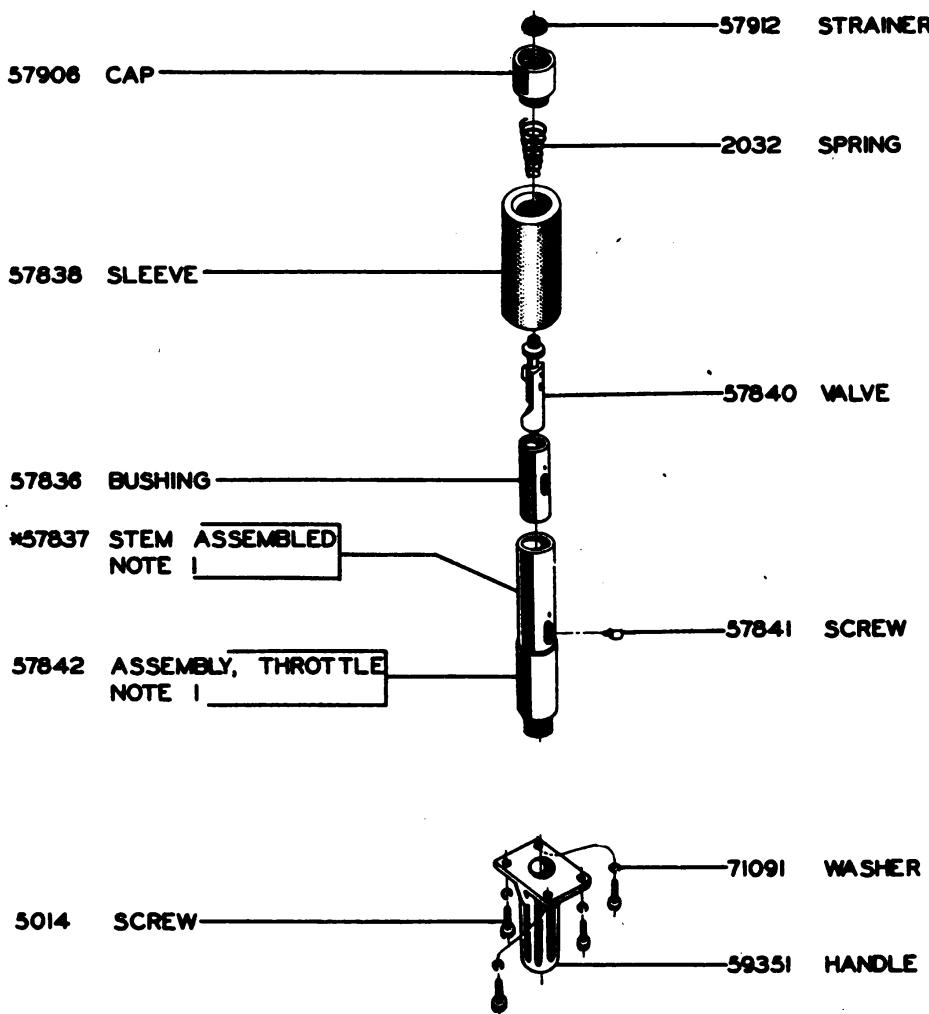


Illustration No. 1
Exploded View of 3 Major Units

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Disassembly of Drill into the 3 Major Units

1. Unscrew the No. 57842 Throttle Assembly from the No. 59353 Cylinder or Motor Unit.
2. Remove the 4 No. 5001 Cylinder Stud Nuts located on the No. 58617 Governor Cap.
3. Pull the Motor Unit from the Gear Case Unit as shown in Illustration No. 1.
4. The No. 59351 Dead Handle, if used, is removed by unscrewing the 4 No. 5014 Dead Handle Cap Screws.



NOTE 1: SEE THROTTLE AND DEAD HANDLE
UNIT MASTER PARTS LIST
* SOLD ONLY ASSEMBLED

Illustration No. 2
Exploded View of Throttle and Dead Handle Unit

Disassembly of Throttle Unit (See Illustration No. 2, page 12)

1. Unscrew No. 57906 Throttle Cap from the No. 57842 Throttle Assembly.
2. Remove No. 57838 Throttle Sleeve and No. 2032 Throttle Spring.
3. Unscrew No. 57841 Valve Screw from 57840 Throttle Valve.
4. Remove the No. 57840 Throttle Valve.
5. Since No. 57836 Throttle Valve Bushing is a press fit in No. 57842 Throttle Assembly, it should only be removed if sufficiently worn to result in air leakages.
6. Clean all parts in solvent and lubricate with OE-10 oil.

Inspections and Repairs**No. 57912 Air Strainer**

- (a) If No. 57912 Air Strainer is in good condition, its removal from No. 57906 Throttle Cap is not necessary.
- (b) If the wire mesh in No. 57912 Strainer is damaged, permitting foreign particles to pass through, the Air Strainer should be replaced.
- (c) The No. 57912 Strainer should be pressed into No. 57906 Throttle Cap so that its curvature center points outward.

No. 2032 Throttle Spring

No. 2032 Throttle Spring holds No. 57840 Valve against seat on No. 57836 Throttle Valve Bushing. Replace if its tension decreases.

Servicing Operations for Stopping Air Leakages

If air leakages are noticeable in region of slotted opening at inner end of No. 57838 Throttle Sleeve when operating the Drill, it is due most likely to a worn No. 57836 Throttle Valve Bushing. If such is the case, replacement of No. 57836 Throttle Valve Bushing is necessary, since air leakages of this nature cause considerable loss of operating power and speed.

To remove No. 57836 Throttle Valve Bushing from No. 57337 Throttle Stem.

1. Plug seat end of No. 57836 Bushing by screwing in a standard 11/16" thread tap.
2. Insert a 11/32" diameter Rod through opposite end of No. 57837 Throttle Stem to bear against tap.
3. Press out No. 57836 Bushing.

To reassemble No. 57836 Bushing into No. 57837 Throttle Stem Assembly:

1. Press No. 57836 Bushing into No. 57837 Stem so that slotted hole and small vent hole in the Bushing is lined up with corresponding holes in No. 57837 Stem. (No. 71823 Drift, as shown in Illustration No. 3, below, can be used for pressing in the No. 57836 Throttle Valve Bushing.)

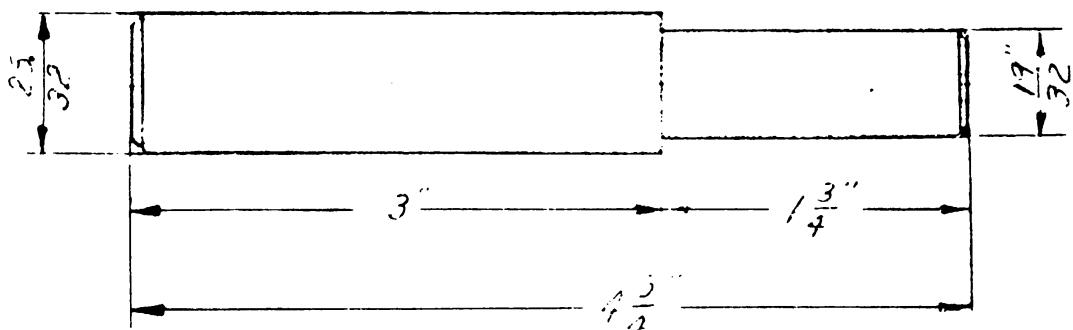


Illustration No. 3
No. 71823 Drift for Pressing in No. 57836 Throttle Bushing

Insert No. 57840 Throttle Valve into No. 57836 Bushing. If the Valve feels loose, it must be replaced. If No. 57840 Valve tends to bind and does not work freely, it may be "freed up" by working valve into No. 57836 Bushing using lard oil. A No. 71785 wrench (as shown in Illustration No. 4, below), which screws onto No. 57840 Throttle Valve, may be used to hold the Valve securely in the above operation.

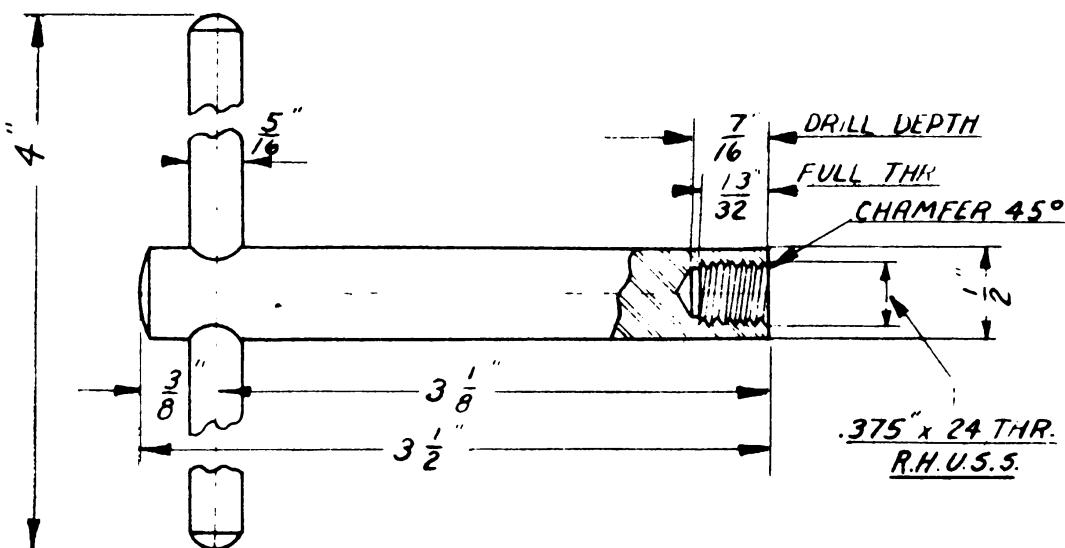


Illustration No. 4
No. 71785 Wrench for Holding No. 57840 Throttle Valve Securely

If No. 57840 Valve cannot be inserted into No. 57836 Bushing, then ream the Bushing with a combination reamer, the size of which corresponds with the actual size of No. 57840 Valve. If a new No. 57840 Valve is used, No. 71824 Combination Stem and Seat Reamer (as shown in Illustration No. 5) may be used for reaming No. 57836 Bushing.

NOTE: A combination Reamer is used so that the 45° Valve Seat is reamed concentrically with center line axis of No. 57836 Bushing.

No. 57840 Throttle Valve may now be inserted into No. 57836 Bushing and, if necessary, may be "freed up", using lard oil.

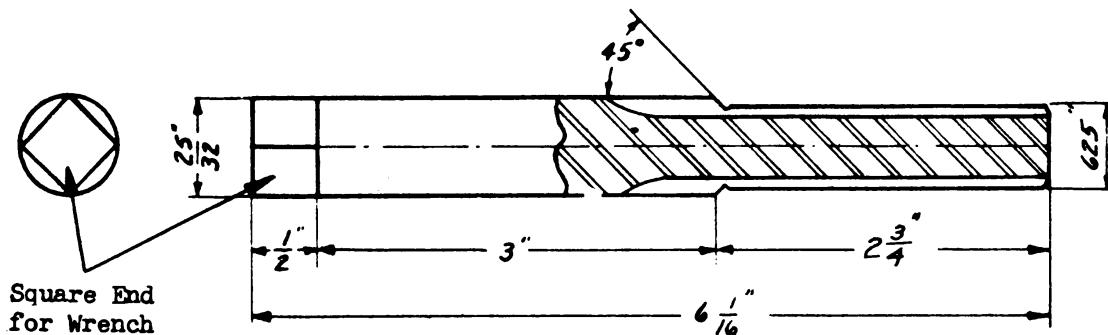


Illustration No. 5
No. 71824 Combination Reamer for Reaming
No. 57836 Throttle Bushing

Internal air leakages, due to improper seating of No. 57840 Throttle Valve against No. 57836 Throttle Valve Bushing and which are noticeable at motor end of No. 57842 Throttle Assembly when No. 57840 Throttle Valve is in closed or "OFF" position, may be stopped without removal and replacement of No. 57836 Throttle Valve Bushing.

To obtain an air tight fit between seat on No. 57840 Valve and No. 57836 Bushing, work seat of No. 57840 Valve against seat on No. 57836 Bushing, using lard oil. No. 71785 Wrench (Illustration No. 4) may be used. A mixture of fine emery (#120) and lard oil may be used as a cutting medium at the two seats, only if the oil fails to produce the required results. On completion of the operation, it is essential that all parts be cleaned thoroughly in gasoline or a similar solvent to remove all traces of the abrasive lapping compound.

Reassembly of Throttle Unit

1. Clean all parts in solvent and lubricate with OE-10 oil.
2. Apply a small amount of light cup grease to outside surface of No. 57837 Throttle Stem before sliding on No. 57838 Throttle Sleeve.
3. Note that inner end of No. 57838 Throttle Sleeve is slotted to pass over the projecting head of No. 57841 Valve Screw.
4. In Illustration No. 2, note shape and position of No. 2032 Throttle Spring into No. 57837 Throttle Stem so that its small diameter bears against No. 57840 Throttle Valve.
5. Tighten No. 57906 Throttle Cap securely in No. 57837 Throttle Stem.

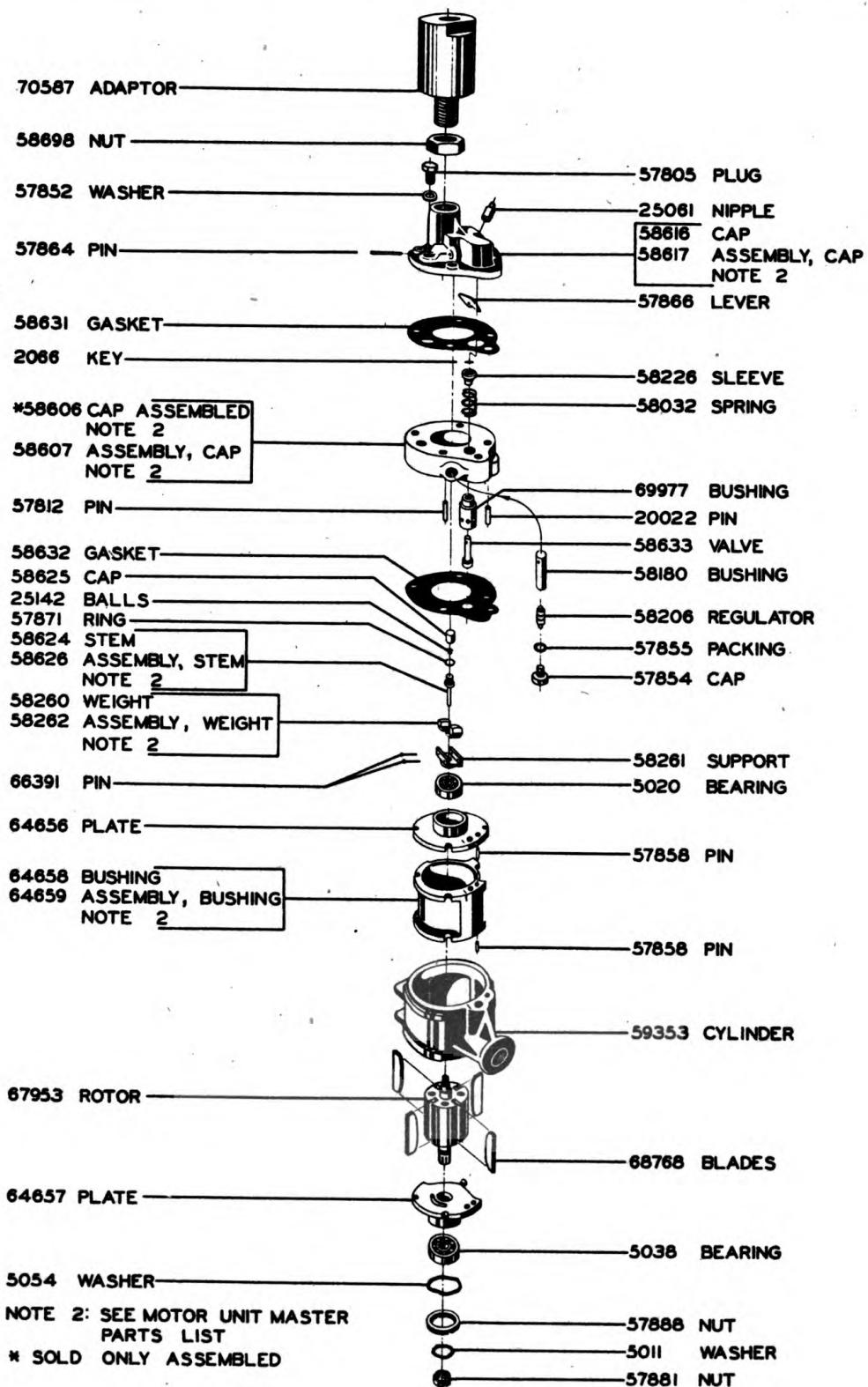


Illustration No. 6
Exploded View of Motor Unit

MOTOR UNIT

The Motor Unit, consisting of several small assemblies in addition to individual motor parts, should be totally dismantled, all parts carefully inspected, repaired or replaced if necessary, lubricated and reassembled as per the following instructions.

Illustration No. 6 indicates the order in which the Motor Parts are disassembled. Note that all Motor Parts are contained in 3 housings: 1. No. 58617 Governor Cap Assembly, 2. No. 58607 Cylinder Cap Assembly and 3. No. 59353 Cylinder.

No. 58631 and No. 58632 Gaskets separate the 3 housings.

Parts to be Inspected in No. 58617 Governor Cap Assembly**No. 57866 Governor Lever**

To insure proper No. 58633 Governor Valve action, it is very important that No. 57866 Governor Lever be replaced when worn down at its ends, as shown in Illustration No. 7, below.

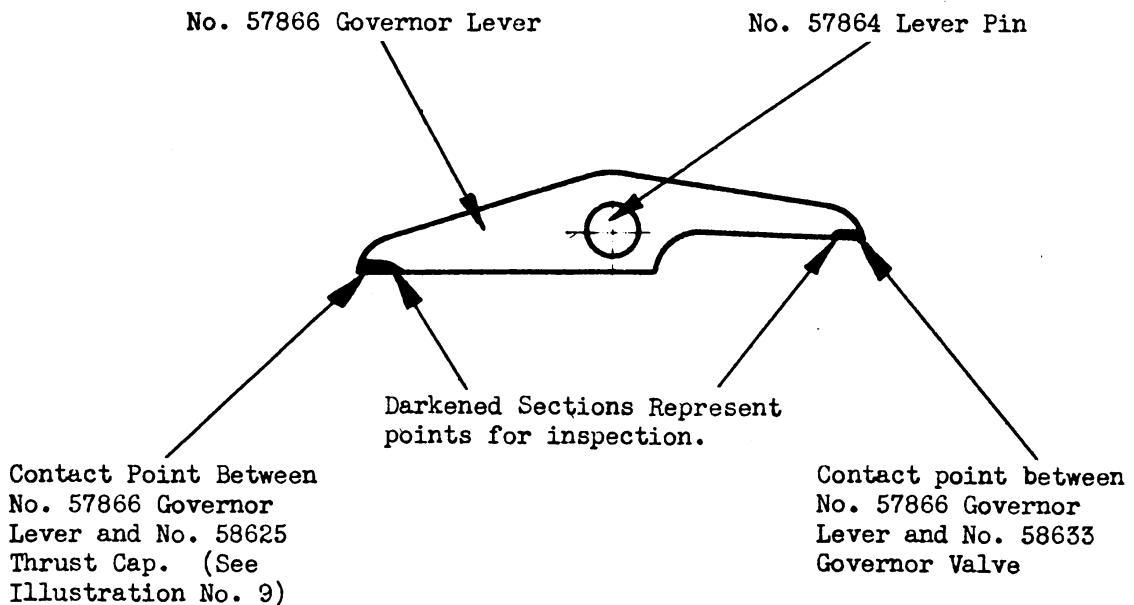


Illustration No. 7
No. 57866 Governor Lever

Under normal operating conditions, the No. 57866 Governor Lever should be replaced once every six months. When replacement is necessary, also replace No. 57864 Governor Lever Pin so that a fairly snug fulcrum point is obtained.

No. 57866 Governor Lever is removed by driving out No. 57864 Governor Lever Pin. When reassembling, be sure heavy end of No. 57866 Lever will lie in center line of the Motor.

No. 57852 Oil Plug Washer

No. 57852 Washer, located under No. 57805 Oil Plug should be replaced if broken and leaking air. The Oil Reservoir must be air tight for efficient operation of the automatic oiling system.

No. 58631 Gasket

No. 58631 Gasket, located between No. 58617 Governor Cap Assembly and No. 58607 Cylinder Cap Assembly, should be replaced if broken.

Parts to be Inspected in No. 58607 Cylinder Cap Assembly**No. 58633 Governor Valve and No. 69977 Governor Valve Bushing**

No. 58633 Governor Valve, which fluctuates, back and forth in No. 69977 Governor Valve Bushing, thereby regulating the amount of air passing into the Motor, is removed as follows: Depress No. 58226 Sleeve and remove No. 2066 Valve Key.

Replacement of No. 69977 Governor Valve Bushing

A snug slip fit should exist between the No. 58633 Governor Valve and the No. 69977 Governor Valve Bushing. Therefore, if the No. 58633 Governor Valve feels fairly loose in the No. 69977 Governor Valve Bushing or if a dark circular strip is present in the location of the air holes, (indicating a worn No. 69977 Bushing) the No. 69977 Governor Valve Bushing should be replaced.

The No. 69977 Governor Valve Bushing is pressed out of and into the No. 58607 Cylinder Cap Assembly by means of a small hand press. It is very important that the No. 69977 Governor Valve Bushing is assembled so that the motor end of the No. 69977 Bushing is flush with the motor side of the No. 58607 Cylinder Cap Assembly.

Fitting No. 58633 Governor Valve into the No. 69977 Governor Valve Bushing

To secure a snug fit between the No. 58633 Governor Valve and the No. 69977 Governor Valve Bushing, a reaming and lapping operation must be employed.

If the No. 58633 Valve can be inserted into the No. 69977 Bushing without reaming, the No. 58633 Valve may be fitted by working it back and forth in the No. 69977 Bushing in a rotational movement. A lard oil should be used for such "freeing up" of No. 58633 Governor Valve.

To hold the No. 58633 Valve securely when working it in, turn down a piece of soft wood so that it may be snugly fitted into open end of the No. 58633 Valve. (Under no circumstances should the wood be forced or tightly wedged into the No. 58633 Valve.)

If the No. 58633 Valve cannot be inserted directly into the new No. 69977 Valve Bushing, ream the No. 69977 Governor Valve Bushing with a straight reamer, the size of which is the same size as the No. 58633 Valve. No. 58633 Valve may then be inserted into No. 69977 Valve Bushing and, if necessary, "freed up" using lard oil. NEVER USE AN ABRASIVE LAPPING COMPOUND. On completion of the above fitting operations, remove all traces of the lard oil with solvent.

No. 58032 Governor Valve Spring

The compression rating for No. 58032 Governor Valve Spring is between 2 lbs. - 15-1/2 ozs. and 3 lbs. - 4-1/2 ozs., when compressed to 3/8" length. If the compression rating of Spring is below the minimum value, it should be replaced.

No. 58206 Oil Regulator and No. 57855 Cap Packing

No. 58206 Oil Regulator should be removed and cleaned thoroughly in solvent. Care must be taken not to burr its edges. If the No. 58206 Oil Regulator tends to stick in No. 58180 Regulator Bushing, a threaded rod (No. 6 x 32 Thr.-R.H.U.S.S.) can be screwed into No. 58206 Regulator to work the Regulator loose. For this reason No. 58206 Regulator must always be assembled so that its tapped hole faces outward.

No. 57855 Cap Packing should be replaced if broken and leaking air.

No. 58632 Cap Gasket

No. 58632 Cap Gasket which lies between No. 58607 Cylinder Cap Assembly and No. 59353 Cylinder, should be replaced if broken.

Disassembly of Parts Contained in No. 59353 Cylinder

1. Lift No. 58626 Governor Stem Assembly out of upper end of No. 67953 Rotor.
2. Unscrew No. 58262 Weight and Support Assembly off No. 67953 Rotor in a clockwise or right hand direction (LEFT HAND THREAD). (To hold No. 67953 Rotor from turning when unscrewing No. 58262 Weight and Support Assembly, clamp pinion end of rotor between two blocks of wood in a vise. Wood blocks are used so as not to burr pinion teeth on No. 67953 Rotor.)
3. Unscrew No. 57881 Lower Rotor Bearing Clamp Nut on Rotor with No. 71741 Combination Wrench. (Shown in Illustration No. 8.)
4. Tap Pinion end of No. 67953 Rotor to drive No. 64656 Upper Bearing Plate and No. 67953 Rotor out of No. 59353 Cylinder.
5. Brace against No. 64656 Upper Bearing Plate and press No. 67953 Rotor through No. 5020 Upper Rotor Bearing.

6. Carefully press No. 5020 Upper Rotor Bearing out of No. 64656 Upper Bearing Plate from the inside.
7. Remove No. 64657 Lower Bearing Plate from No. 59353 Cylinder by knocking it out from the inside using the handle end of a hammer.
8. Screw out No. 57888 Lower Rotor Bearing Clamp Nut, using No. 71741 Combination Wrench, shown in Illustration No. 8.
9. Remove No. 5038 Lower Rotor Bearing from No. 64657 Lower Bearing Plate.

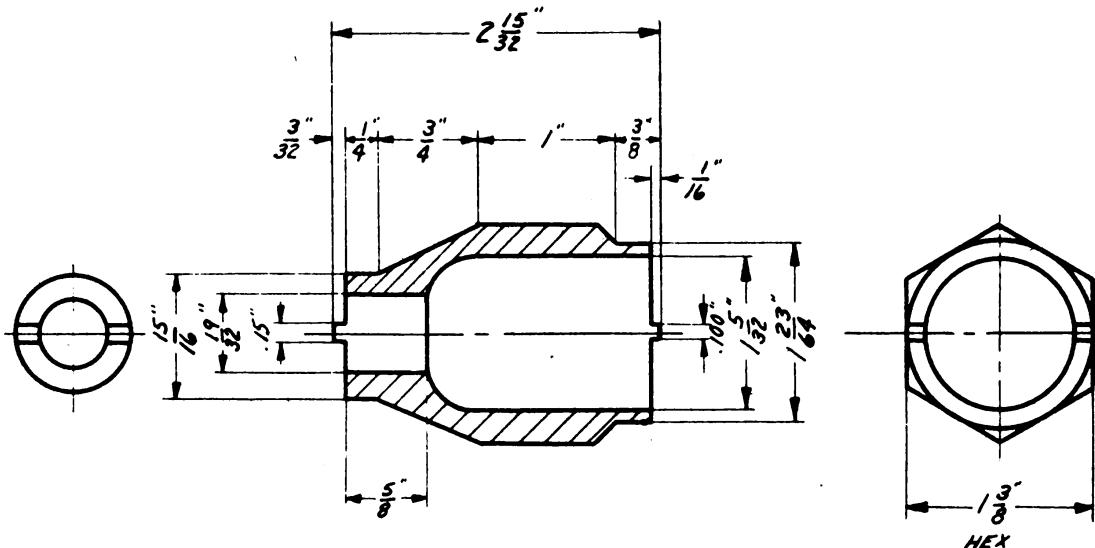


Illustration No. 8
71741 Combination Wrench

No. 64659 Cylinder Bushing Assembly should not be removed from No. 59353 Cylinder unless it is absolutely necessary. (See No. 64659 Cylinder Bushing Assembly for replacement of Bushing.)

MOTOR PARTS TO BE INSPECTED

No. 58626 Governor Stem Assembly

If the convex surface at top of No. 58625 Thrust Cap is appreciably worn off due to the continuous pressure and some rotational movements against the No. 57866 Governor Lever, the No. 58625 Cap should be replaced. (See Illustration No. 9).

The No. 58625 Thrust Cap pulls off the No. 57871 Thrust Cap Retainer Ring, which encircles the No. 58624 Stem.

Wash the parts in solvent and dry with blast of air. Place a small amount of a light cup grease into the No. 58625 Thrust Cap to lubricate the three No. 25142 Thrust Balls and reassemble.

Be sure No. 58625 Thrust Cap is snapped over No. 57871 Thrust Cap Retainer Ring.

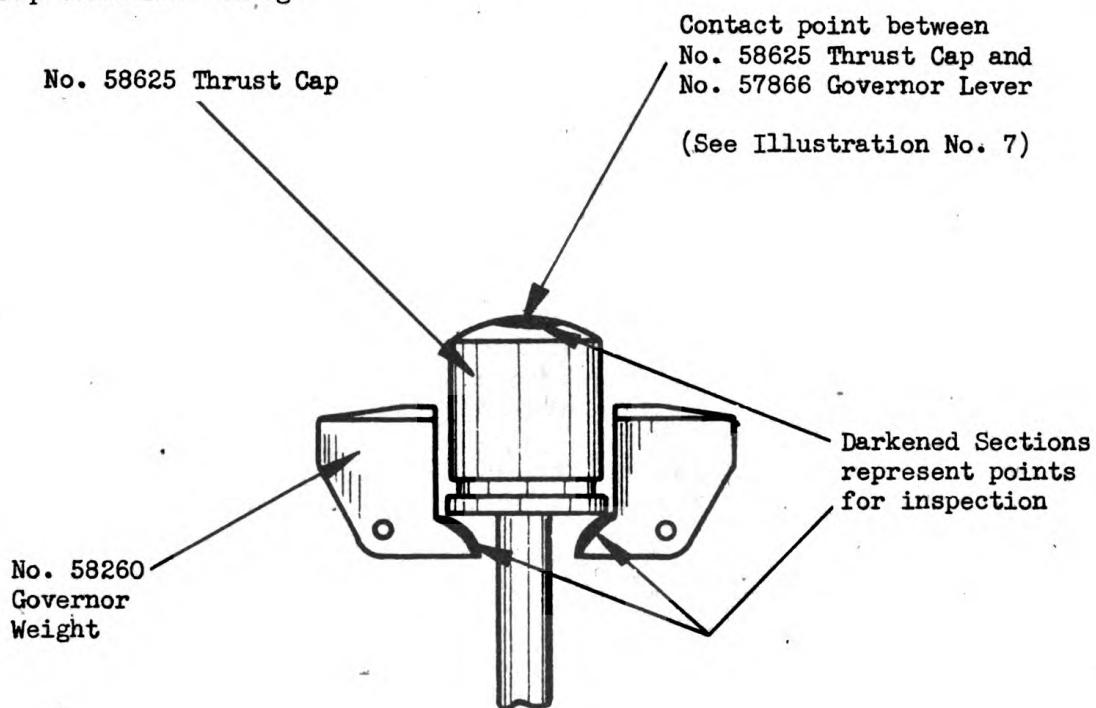


Illustration No. 9

No. 58260 Governor Weights and No. 58626 Governor Stem Assembly

No. 58262 Governor Weight Assembly

Inspect the 2 No. 58260 Governor Weights at points as shown in Illustration No. 9. If No. 58260 Weights are considerably worn at these points, they should be replaced.

Drive out the 2 No. 66391 Governor Weight Pins to remove the No. 58260 Governor Weights from No. 58261 Support.

After reassembling No. 58260 Governor Weights into No. 58261 Governor Weight Support, lubricate with a light grease and make certain that the 2 No. 58260 Governor Weights are free to tip back and forth in groove.

A foreign particle, such as a small chip wedged between the No. 58260 Governor Weight and No. 58261 Governor Weight Support will hinder the operation of the Governor Weight.

No. 68768 Rotor Blades

The 4 No. 68768 Rotor Blades should be replaced when the greatest width of the blade is $17/32"$ or less as shown in Illustration No. 10. Also, if No. 68768 Rotor Blade should expand due to heat, so that its free movement in rotor slot is impaired, the Blade should be replaced.

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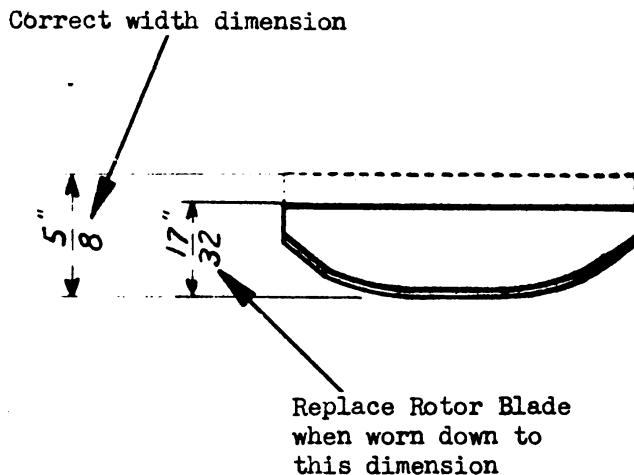


Illustration No. 10
Rotor Blade with New and Worn Width Dimensions

Clean out Rotor Blade Slots in No. 67953 Rotor before inserting the No. 68768 Rotor Blade so that the long straight edge faces outward. Lubricate the Rotor Blades only with a light machine oil (OE-10) - Never with Grease.

Nos. 5020 Upper and 5038 Lower Rotor Bearings

Nos. 5020 Upper and 5038 Lower Rotor Bearings should always feel firm. If the Inner and Outer Ball Race can be deflected in opposite parallel directions, the Ball Race Grooves are most likely worn in width, resulting in end play, in which case the bearing should be replaced. Also, note whether or not outer ball race tends to bind or stick when spinning the bearing.

Worn bearings with considerable end play cause No. 67953 Rotor to drag against No. 64656 Upper and No. 64657 Lower Bearing Plates, which in time will reduce operating efficiency. Worn bearings also cause abnormal wear of Pinion Teeth at end of No. 67953 Rotor.

Never try to clean a ball bearing by blowing out the old grease with compressed air. Compressed air often contains abrasives which may become lodged in the bearing, causing rapid failure. A ball bearing should be washed always by submerging it in a solvent such as gasoline, holding the inner ball race and spinning the Outer race under the surface of the solvent until clean.

When pressing a ball bearing onto a shaft, apply pressure to the Inner Ball Race.

When pressing bearing into a seat or socket, apply pressure to the Outer Ball Race.

Pressure applied through the balls may cause indentation of the ball race grooves, resulting in rapid bearing failure.

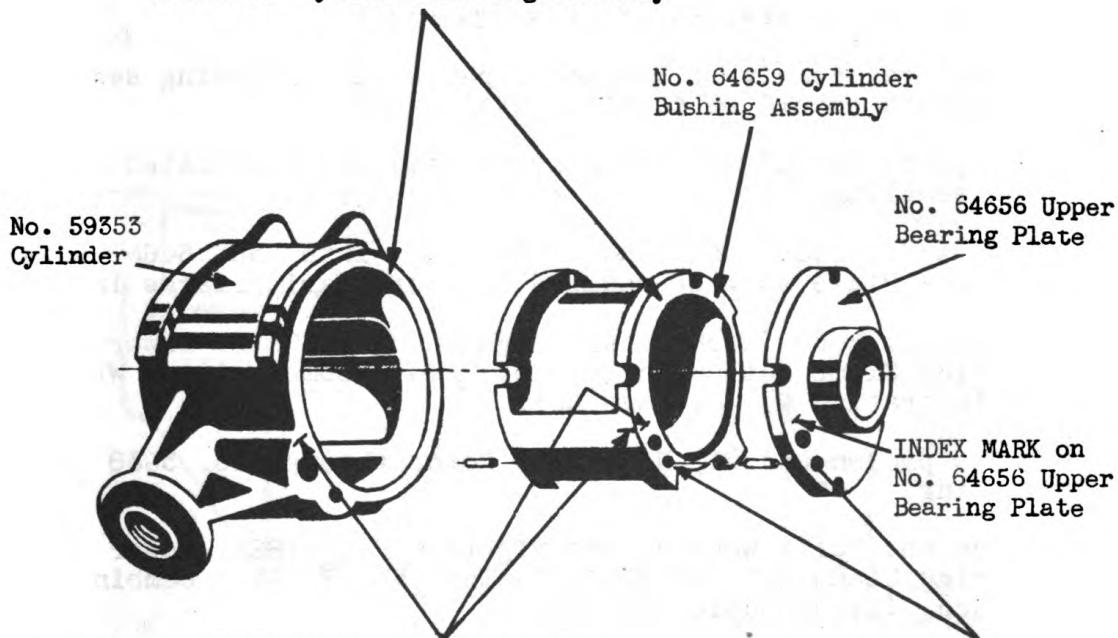
No. 64659 Cylinder Bushing Assembly

Continuous pressure of the 4 No. 68768 Rotor Blades will, in time, cause wear to the inside surface of No. 64659 Cylinder Bushing Assembly, denoted by a scratchy and wavy appearance. When this is noted, No. 64659 Cylinder Bushing Assembly should be replaced.

Remove No. 64659 Cylinder Bushing Assembly from No. 59353 Cylinder by pressing it out through upper end of the Cylinder.

It is very important that No. 64659 Cylinder Bushing Assembly is reassembled in its correct position in the No. 59353 Cylinder. Be sure that the index markings on the No. 64659 Cylinder Bushing Assembly and the No. 59353 Cylinder are lined up before inserting and pressing the No. 64659 Cylinder Bushing Assembly into the upper end of the No. 59353 Cylinder. (Illustration No. 11 shows correct alignment of the No. 64659 Cylinder Bushing Assembly with the No. 59353 Cylinder before reassembling.)

Upper End of No. 59353 Cylinder and
No. 64659 Cylinder Bushing Assembly



Line up INDEX MARKS Before Pressing
No. 64659 Cylinder Bushing Assembly
into No. 59353 Cylinder

No. 57858 Dowel Pin in
No. 64659 Cylinder Bushing
Assembly Enters Dowel Pin
Hole in No. 64656 Upper
Bearing Plate

Illustration No. 11
View of Cylinder, Cylinder Bushing Assembly
and Upper Bearing Plate

Note that if No. 64659 Cylinder Bushing Assembly is properly assembled directly in the center of No. 59353 Cylinder, there is a space of 1/4" at each end of Cylinder Bushing Assembly and Cylinder for placement of No. 64656 Upper and No. 64657 Lower Bearing Plates.

Nos. 64656 Upper and 64657 Lower Bearing Plates

Worn Nos. 5020 Upper and 5038 Lower Rotor Bearings, which have considerable end play will cause body of No. 67953 Rotor to drag against flat surface of No. 64656 Upper and No. 64657 Lower Bearing Plates resulting in a scratched Bearing Plate surface. If the surface is scratched deeply, both Bearing Plates should be replaced. When motor parts are correctly assembled, a clearance of .0025" exists between body of No. 67953 Rotor and the end plates. (See: "Reassembly of Motor Parts", below.)

No. 67953 Rotor

An inspection should be made of the Pinion Teeth on No. 67953 Rotor. If they appear considerably worn, burred, or broken, the No. 67953 Rotor should be replaced.

REASSEMBLY OF MOTOR PARTS

For proper reassembly of the motor parts the following sequence of operations should be carefully followed:

1. All parts should be thoroughly cleaned and lubricated before reassembling.
2. Insert No. 5038 Lower Rotor Bearing into No. 64657 Lower Bearing Plate so that stamped side of bearing faces inward.
3. Place No. 5054 Washer and tighten No. 57888 Lower Rotor Bearing Clamp Nut using a No. 71741 Combination Wrench, (Illustration No. 8, Page 20).
4. Press pinion end of No. 67953 Rotor through No. 5038 Rotor Bearing.
5. Place No. 5011 Washer and tighten No. 57881 Lower Rotor Bearing Clamp Nut on Rotor using No. 71741 Combination Wrench, (Illustration No. 8).
6. Check clearance between body of No. 67953 Rotor and flat surface of No. 64657 Lower Bearing Plate. (In Illustration No. 12, note clearance of .0025").

NOTE: Theoretically, a clearance of .0025" should exist at each end between body of Rotor and flat surface of Nos. 64656 Upper and 64657 Lower Bearing Plates if all parts are properly reassembled. This clearance may vary slightly, but if No. 67953 Rotor can be turned freely with no signs of binding when motor unit is fully assembled and held in any position, it may be considered properly assembled.

7. Insert No. 68768 Rotor Blades into Rotor Slots in No. 67953 Rotor so that straight long edge of Blade faces outward.
8. Place Unit through No. 59353 Cylinder so that No. 57858 Dowel Pin in No. 64659 Cylinder Bushing Assembly lines up with Dowel Pin hole in No. 64657 Lower Bearing Plate.
9. Place a 2" pipe, approximately 1-3/4" in length, against No. 64657 Bearing Plate and press Bearing Plate into end of No. 59353 Cylinder, seating it against end of No. 64659 Cylinder Bushing Assembly. (Illustration No. 12, below, shows correct procedure of replacement.)

Pressure is applied here to seat No. 64657 Lower Bearing Plate in No. 59353 Cylinder and against No. 64659 Cylinder Bushing Assembly.

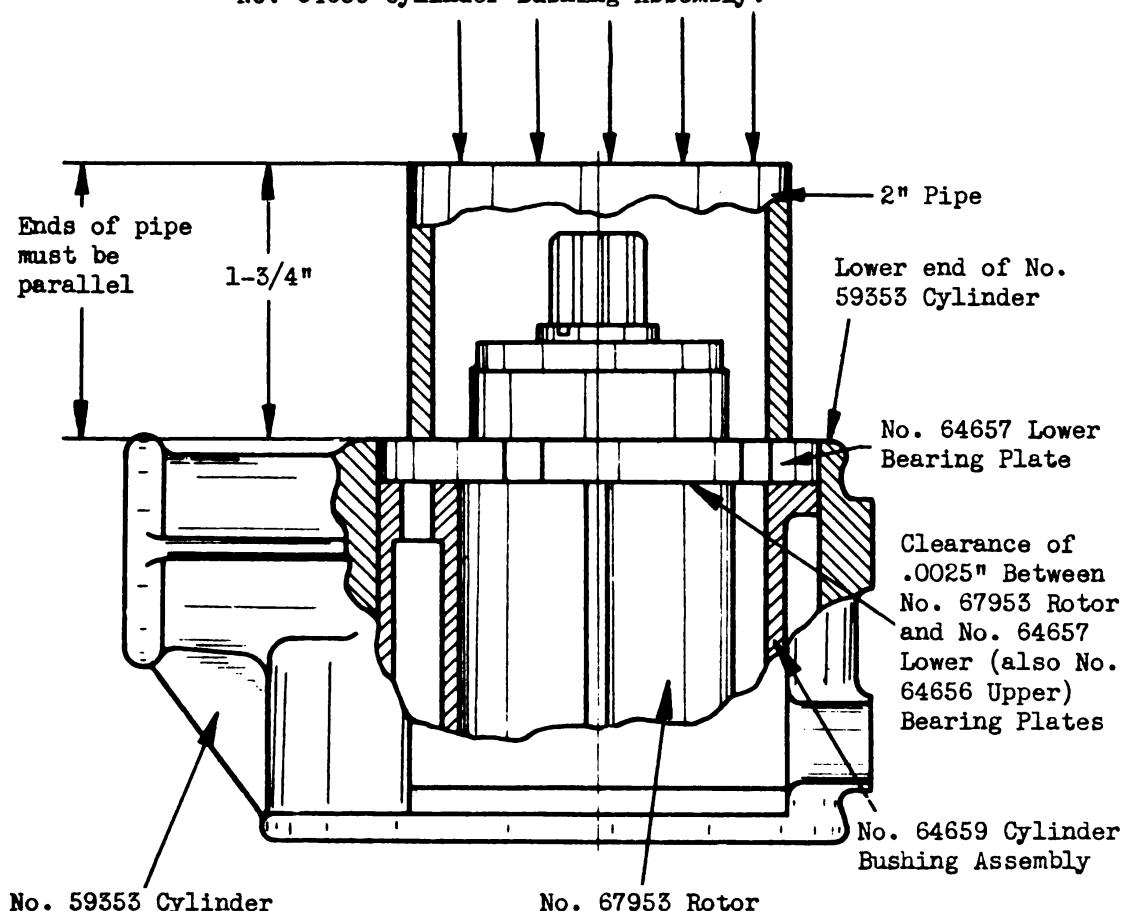


Illustration No. 12
View showing assembly of Lower Bearing Plate into Cylinder

10. Line up No. 57858 Dowel Pin in No. 64659 Cylinder Bushing Assembly with Dowel Pin Hole in No. 64656 Upper Bearing Plate and insert Bearing Plate into upper end of No. 59353 Cylinder, using a 2" pipe as before. (NEVER apply the pressure against the protruding Bearing Housing in center of No. 64656 Upper Bearing Plate.)

11. Place No. 5020 Upper Rotor Bearing over No. 67953 Rotor and into Housing in No. 64656 Bearing Plate.
12. In a left hand direction (LEFT HAND THREAD) screw No. 58262 Governor Weight and Support Assembly onto No. 67953 Rotor to clamp No. 5020 Upper Rotor Bearing on No. 67953 Rotor.
13. Hold Motor Unit in any position and spin No. 67953 Rotor to determine its freeness, as described previously.

No. 58607 Cylinder Cap Assembly and No. 58617 Governor Cap Assembly, along with No. 58632 and 58631 Gaskets are assembled to No. 59353 Cylinder by the 4 No. 58641 Cylinder Studs when Drill is fully assembled.

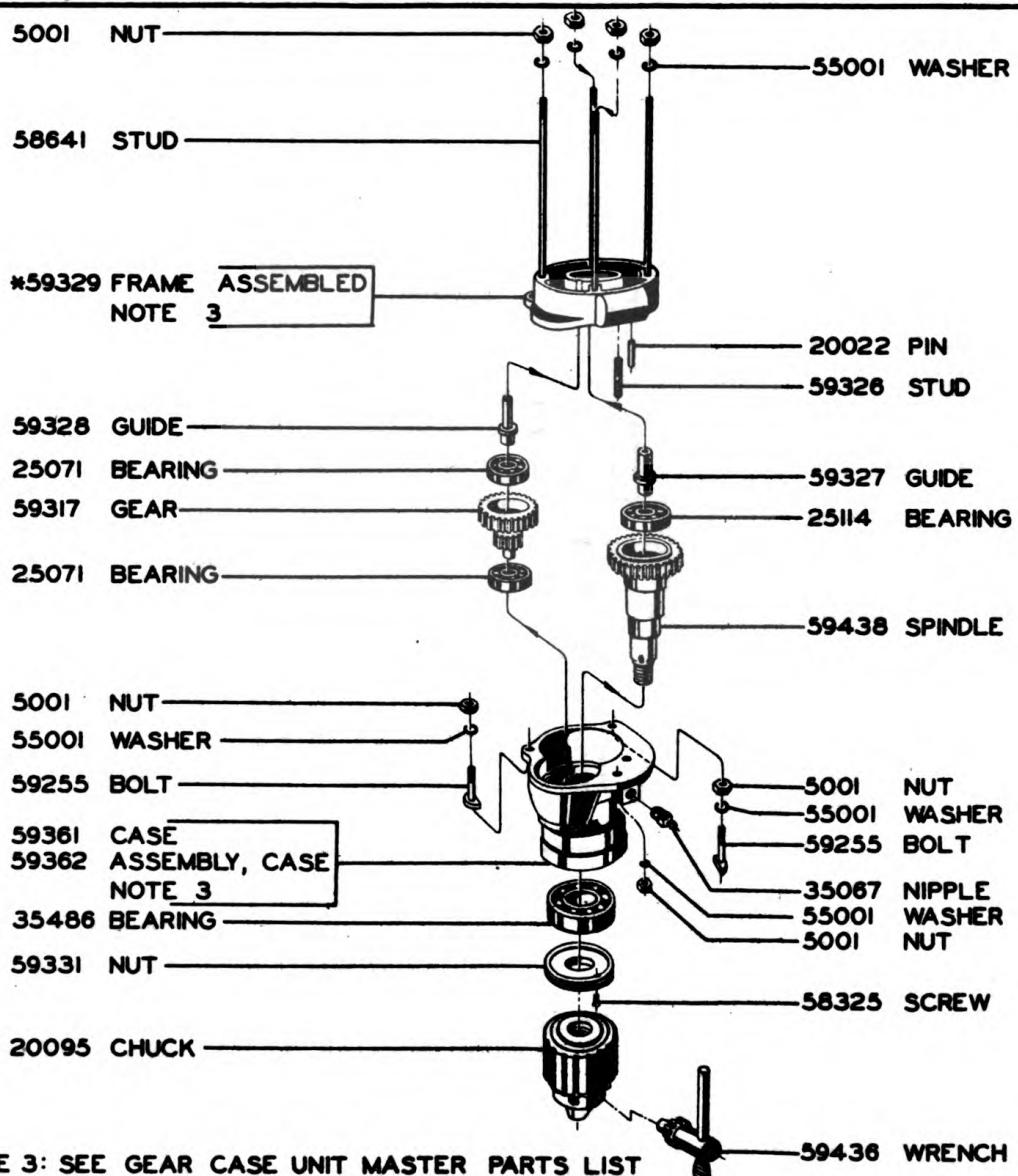


Illustration No. 13
Exploded View of Gear Case

GEAR CASE UNIT

(See Illustration No. 13, page 26)

The Gear Case Unit may be divided into two smaller assemblies:-
A. No. 59329 Frame Assembly B. No. 59362 Gear Case Assembly.
Each assembly may be serviced separately.

Separate No. 59362 Gear Case and No. 59329 Frame Assemblies by removing the two No. 59255 Gear Case Bolts, and No. 5001 Nut from No. 59326 Gear Case Stud, then tapping threaded end of No. 59438 Spindle with light blows to drive No. 59329 Frame Assembly off No. 59362 Gear Case Assembly.

No. 59329 Frame Assembly

No. 59329 Frame Assembly separates the motor unit from No. 59362 Gear Case Assembly and serves to anchor No. 59327 Spindle Thrust Guide and No. 59328 Reducing Gear Guide.

Replacement of No. 59327 Spindle End Thrust Guide and No. 59328 Reducing Gear Guide is necessary only if the part should break, in which case the guide is pressed out and replaced.

No. 59329 Frame Assembly should be thoroughly cleaned.

No. 59362 Gear Case Assembly

The parts contained in No. 59362 Gear Case Assembly should be removed from the gear case and thoroughly cleaned in solvent to remove all traces of old grease. Pack all bearings with a light cup grease when reassembling. Also insert a small surplus amount of grease into the No. 59362 Gear Case Assembly after fully assembled with all internal parts. (For proper grade of Grease Lubricant to be used, See "LUBRICATION", page 6).

No. 35486 Lower Spindle Bearing slides out of No. 59362 Gear Case Assembly after loosening No. 58325 Tension Screw and unscrewing No. 59331 Lower Spindle Bearing Clamp Nut in a counter clockwise direction.

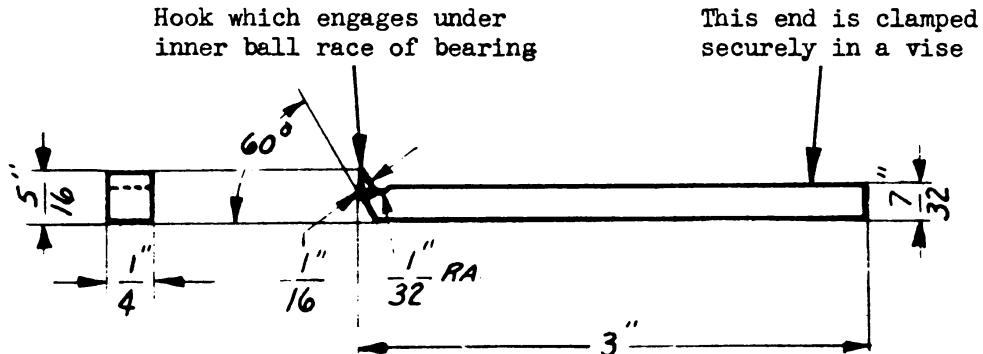
No. 25114 Upper Spindle Bearing and No. 59438 Spindle

No. 25114 Bearing should never be extracted from its housing in No. 59438 Spindle unless it is considerably worn and replacement is necessary. Refer to "No. 5020 and 5038 Upper and Lower Rotor Bearings" under "Motor Unit Section", to determine whether bearing is to be replaced.

If No. 25114 Bearing is to be replaced, remove it from No. 59438 Spindle, using a No. 71822 Bearing Puller (Illustration No. 14) as follows:

1. Clamp long, straight end of No. 71822 Bearing Puller securely in a vise.
2. Place No. 25114 Bearing over Bearing Puller so that hook on Puller hooks in behind inner ball race of the Bearing.

3. Rotate slightly and tap No. 59438 Spindle off the No. 25114 Bearing using a soft hammer so as not to burr the gear teeth on No. 59438 Spindle.



(Note: Material must be hardened and drawn for maximum strength.)

Illustration No. 14
 No. 71822 Bearing Puller for Removing No. 25114 Bearing
 from No. 59438 Spindle, and No. 25071 Bearings
 from No. 59317 Gear Housing and
 No. 59362 Gear Case Housing

Before pressing No. 25114 Bearing back in, inspect the Gear Teeth on No. 59438 Spindle. If they are burred, broken or considerably worn down, Spindle should be replaced. As a general rule, if replacement of No. 59438 Spindle is necessary, No. 25114 Bearing is worn enough to warrant its replacement also.

No. 35486 Lower Spindle Bearing

Inspect No. 35486 Lower Spindle Bearing which fits in lower end of No. 59362 Gear Case Assembly. If its outer ball race, when spun, tends to bind or stick considerably, the bearing should be replaced.

No. 35486 Lower Spindle Bearing must be assembled into its seat in No. 59362 Gear Case Assembly so that its shielded side faces outward and lies against No. 59331 Lower Spindle Bearing Clamp Nut when fully assembled.

No. 25071 Reducing Gear Bearings and No. 59317 Reducing Gear

No. 59317 Reducing Gear is supported at each end by a No. 25071 Reducing Gear Bearing. The upper No. 25071 Bearing fits in housing in No. 59317 Reducing Gear. The lower No. 25071 Bearing fits in housing in No. 59362 Gear Case Assembly.

These bearings should be extracted only when replacement is necessary, using a No. 71822 Bearing Puller, (Illustration No. 14).

Before pressing upper No. 25071 Bearing into housing in No. 59317 Reducing Gear, inspect the gear to determine whether its replacement is necessary.

REASSEMBLY OF 3 MAJOR UNITS

The 3 Major Units having been properly inspected and serviced, as described previously, may now be assembled together. (Refer to Illustration No. 15, below, which shows the 3 Major Units as they appear before reassembly.)

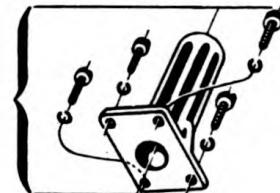
Before reassembling the Major Units, pack No. 5020 Upper and No. 5038 Lower Rotor Bearings as well as fill the gear case 2/3 full with the proper grade of grease. (See "Lubrication", page 6).

Also apply a small amount of grease around No. 58262 Governor Weight and Support Assembly, No. 58626 Governor Stem Assembly and No. 58032 Governor Valve Spring.

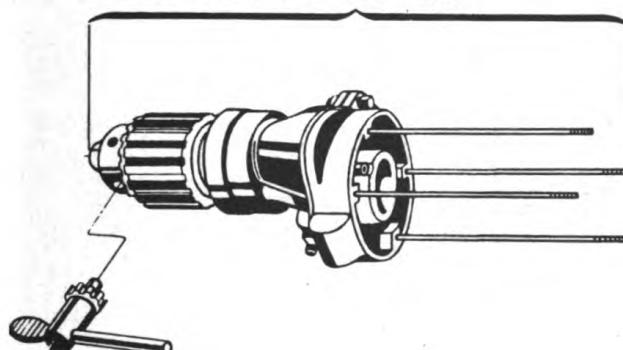
Be sure No. 58631 and No. 58632 Cap Gaskets are complete and lie in their correct positions.

Tighten all nuts evenly and securely.

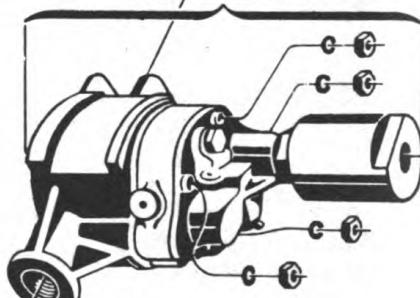
NOTE: DEAD HANDLE MAY BE USED TO HOLD DRILL WHEN OPERATING WITHOUT THOR NO. 26 DRILL STAND



GEAR CASE UNIT



MOTOR UNIT



THROTTLE UNIT



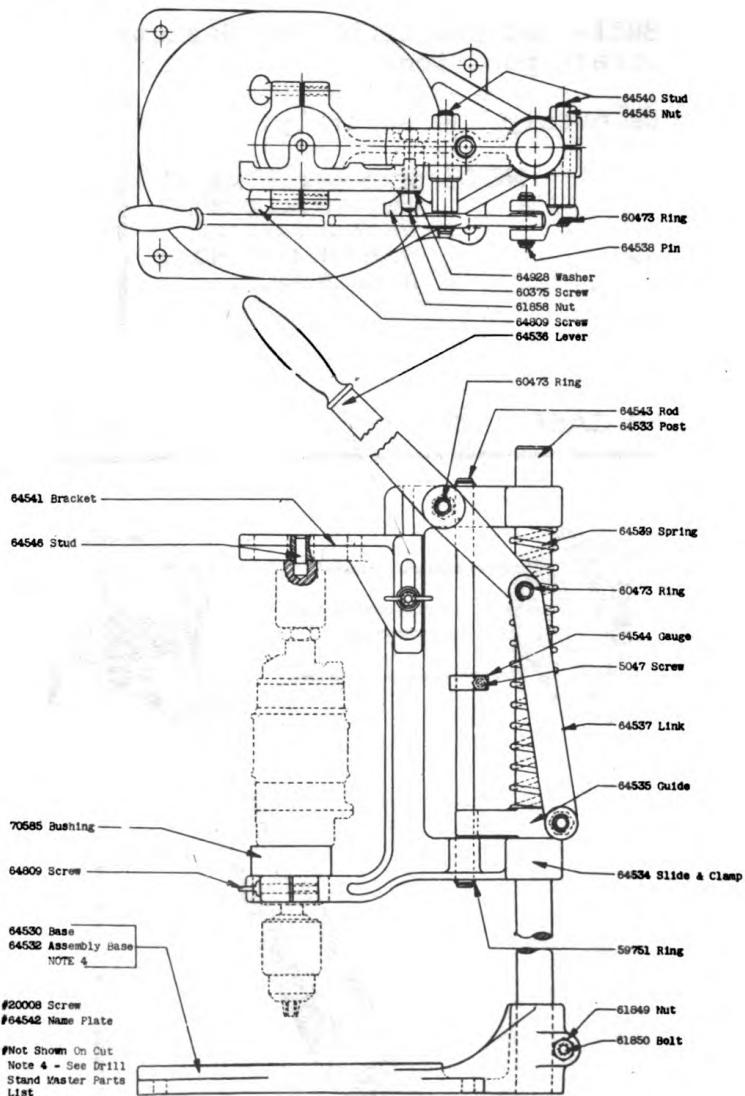
Illustration No. 15
Exploded View of Major Units, 253X Drill

PLACEMENT OF DRILL INTO NO. 26 DRILL STAND

Place Drill into No. 70585 Bushing, located in No. 64534 Slide and Clamp, so that No. 59362 Gear Case Assembly rests on back half of No. 70585 Bushing.

Lower No. 64541 Bracket to engage it with No. 70587 Adaptor, located at top of drill. No. 64546 Stud in No. 64541 Bracket enters hole in No. 70587 Adaptor. Tighten No. 61858 Thumb Nut securely. Also tighten the two No. 64809 Thumb Screws to clamp No. 70585 Bushing against No. 59362 Gear Case Assembly on Drill.

NOTE: DO NOT FAIL TO FILL OIL RESERVOIR THROUGH NO. 57805 OIL PLUG HOLE AND FLUSH DRILL WITH LIBERAL AMOUNTS OF (OE-10) OIL BEFORE PLACING INTO SERVICE.



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PARTS LIST

CROSS SECTION VIEWS

EXPLODED VIEWS

PREPARATION OF REQUISITIONS

Sample Copy for Use in the Preparation of Requisitions

Revisions in QMC Form 400 for requisitioning spare parts are confined to new column headings. Until new forms are available all organizations are to continue using the present form and either type or write in corrections indicated in column headings.

Under revised heading "Nomenclature and Unit" list the article and the unit (ea for each; lb for pound, etc.). Under heading "Authorized or Maximum Level" list the authorized depot stock levels or organizational allowances given in Part III of the Corps of Engineers Supply Catalog. The total number on hand for each item is listed under "On Hand". In column

headed "Due In" enter the total quantity previously requisitioned but not delivered. For "Initial" and "Replenishment" requisitions, the sum of "Required", "Due In", and "On Hand" should equal the "Authorized or Maximum Level".

On this page is shown a sample requisition on QMC Form No. 400 which conforms to the latest revisions. The marginal notes give instructions for preparing a requisition for spare parts for Engineer equipment. Additional information on this subject is contained in section AA-1 of Part III Engineer Supply Catalog, available from the Engineer Field Maintenance Office, P. O. Box 1679, Columbus, Ohio.

State PERIOD designation by use of one of the following terms:
 (1) "INITIAL"—first requisition of authorized allowances.
 (2) "REPLENISHMENT"—subsequent requisitions to maintain authorized allowances.
 (3) "SPECIAL"—requisitions for necessary repairs not covered by allowances.

Type "SPARE PARTS" in upper right hand corner of requisition.

Give complete shipping instructions. Special instructions for packing, marking, routing, etc., should be given at the end of the requisition.

State proper nomenclature of machine, also make, model, machine serial number and U. S. A. registration number.

Prepare a separate requisition for each different machine.

State basis or authority and date delivery is required, immediately below description of machine.

Double space between items.

Group parts required under group headings as shown in manufacturers' parts catalogs (Technical Manuals).

State manufacturers' parts numbers and nomenclature descriptions accurately and completely. Do not use abbreviations.

WAR DEPARTMENT Q. M. C. Form No. 400 Revised Apr. 1, 1943		(SAMPLE)		SPARE PARTS	
REQUISITION					
To, Engineer Field Maintenance Office, P.O. Box 1679, Columbus, Ohio, No. of Sheets 1, Sheet No. 1 Requisition No. E-511-3-Ab, Date 6 October 1943, Period Special					
SHIP TO, Engineer Property Officer, Pine Camp, NEW YORK MARKED FOR: Supply Officer, 147th Engineer Regiment, Pine Camp, NEW YORK					
Requisition By (show Signature, Rank, Organization, Destination, If different from "SHIP TO", include address):					
<p>Robert E. Roe Robert E. Roe Major, C.E. Engineer Property Officer</p>			<p>John D. Doe John D. Doe Colonel, C.E. Executive Officer</p>		
ITEM LTP. NO.	DESCRIPTION	AUTHORIZED OR MAXIMUM LEVEL	ON HAND	REQUISITION DUE IN	REQUIRED
PARTS FOR DRILL, PNEUMATIC, PORTABLE, ROTARY, 9/16" CAPACITY, THRO. NO. 2531, MODEL 4444, SERIAL NO. 745342					
Basis: Repair of disabled equipment Delivery requested by 20 October 1943					
<u>THROTTLE UNIT</u>					
2032	SPRING, Throttle	ea	-	0	0
<u>MOTOR UNIT</u>					
68768	BLADE, Rotor	ea	-	0	0
<u>GEAR CASE UNIT</u>					
59436	WRENCH, Chuck	ea	-	0	0
*					

*Nonexpendable items such as tools must be accounted for, when requisitioned, by a statement that they have been placed on REPORT OF SURVEY or STATEMENT OF CHARGES.

Emergency requisitions sent by telephone, telegraph or radio must always be confirmed immediately with requisition marked: "Confirming (state identifying data)."

PREPARATION OF REQUISITIONS

A sample requisition in the correct form for submission by the Engineer Property Officer is shown on the opposite page.

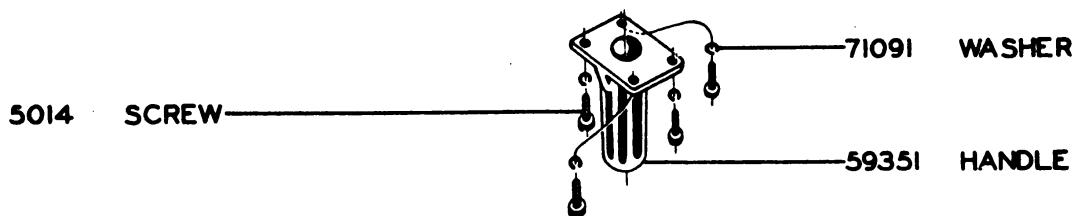
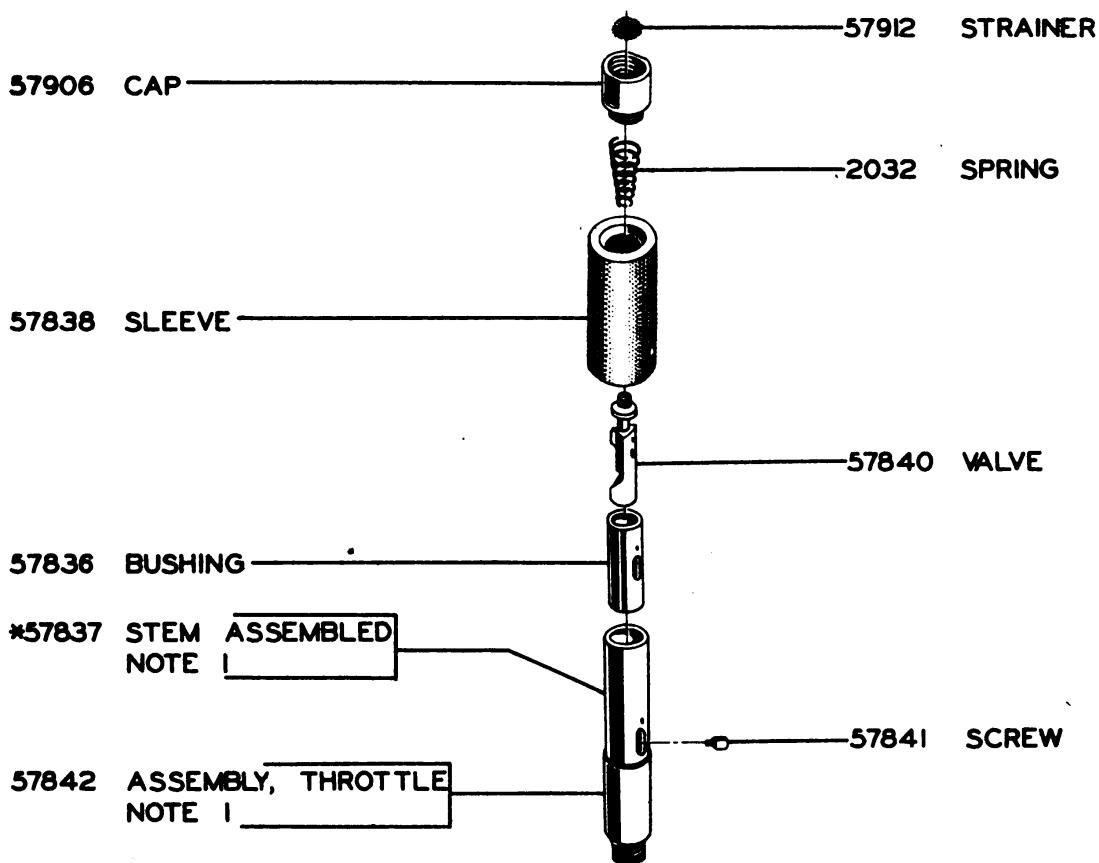
THIS SHALL BE FOLLOWED IN MAKING OUT REQUISITIONS

In order to eliminate duplication of work, Property Officers may authorize organizations to prepare requisitions in final form, leaving requisition number space blank for completion by Property Officer.

THE FOLLOWING RULES WILL BE OBSERVED CAREFULLY IN PREPARING REQUISITIONS FOR SPARE PARTS:

- a. Prepare a separate requisition for each different machine.
- b. Type "SPARE PARTS" in upper right hand corner of requisition form.
- c. State PERIOD designation by use of one of the following terms:
 - (1) "INITIAL"—first requisition of authorized allowances.
 - (2) "REPLENISHMENT"—subsequent requisitions to maintain authorized allowances.
 - (3) "SPECIAL"—requisitions for necessary repairs not covered by allowances.
- d. Give complete shipping instructions.
- e. State proper nomenclature of machine, and make, model, serial number and registration number.
- f. State basis of authority, and date delivery is required, immediately below description of machine.
- g. Group parts required under group headings as shown in manufacturer's parts catalogs.
- h. State manufacturers' parts numbers and nomenclature descriptions accurately and completely. Do not use abbreviations.
- i. Double space between items.
- j. Emergency requisitions sent by telephone, telegraph, or radio must always be confirmed immediately with requisition marked: "Confirming (state identifying data)."
- k. Nonexpendable items must be accounted for.

EXPLODED VIEW OF THROTTLE AND DEAD HANDLE UNIT



NOTE 1: SEE THROTTLE AND DEAD HANDLE
UNIT MASTER PARTS LIST

* SOLD ONLY ASSEMBLED

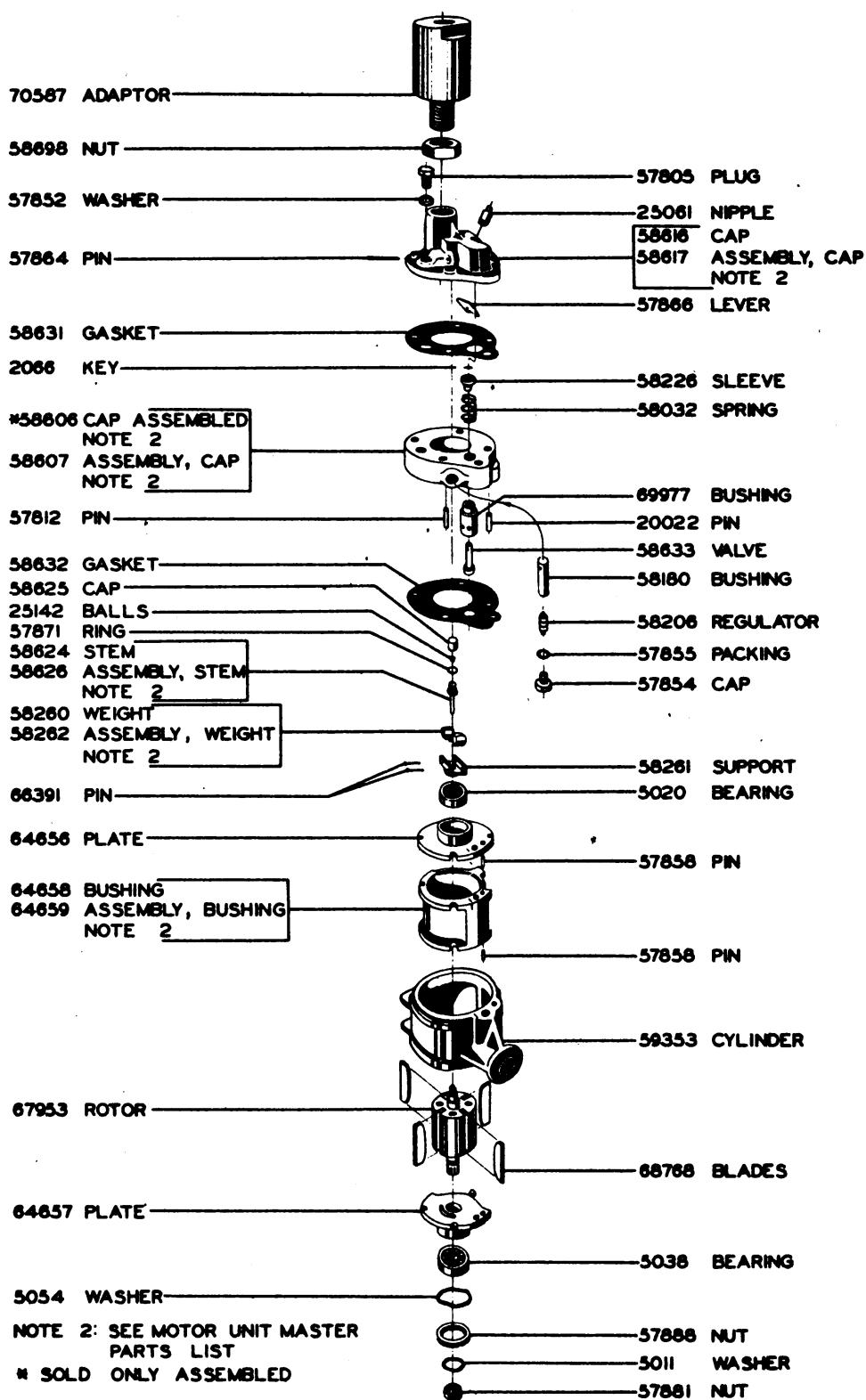
NUMERICAL PARTS LIST FOR THROTTLE AND DEAD HANDLE UNIT

Mfr's. Part No.	Nomenclature	No. of Parts Per Tool	Wt. Each in lbs.	Price Per Part
2032	Spring, throttle.	1		\$.15
5014	Screw, Cap.	4		.10
57836	Bushing, throttle	1	1/4	1.40
*57837	Stem Assembled, throttle with No. 57836 Bushing.	1	1	4.45
57838	Sleeve, throttle.	1	3/4	2.55
57840	Valve, throttle	1		1.15
57841	Screw, throttle valve	1		.10
57842	Assembly, throttle complete includes: 2032 Spring 57837 Stem Assembled 57838 Sleeve 57840 Valve 57841 Screw 57906 Cap 57912 Strainer	1	1-7/8	13.25
57906	Cap, throttle, 1/2" female pipe thread	1		1.15
57912	Strainer.	1		.10
59351	Handle, Dead.	1	5/8	2.90
71091	Washer, Dead Handle Clamp Screw .	4		.03

* - Sold Only Assembled

Prices shown are subject to change without notice.

EXPLODED VIEW OF MOTOR UNIT



NUMERICAL PARTS LIST FOR MOTOR UNIT

Mfr's. Part No.	Nomenclature	No. of Parts Per Tool	Wt. Each in lbs.	Price Per Part
2066	Key, governor valve	1		\$.05
5011	Washer, Clamp nut on rotor.	1		.10
5020	Bearing, upper rotor.	1		1.15
5038	Bearing, lower rotor.	1		1.35
5054	Washer, rotor bearing clamp nut .	1		.05
20022	Pin, cap and cylinder dowel . . .	1		.05
25061	Nipple, governor cap grease . . .	1		.10
25142	Ball, governor stem 5/32"	3		.02
57805	Plug, oil	1		.20
57812	Pin, oil regulator bushing.	1		.05
57852	Washer, oil plug.	1		.05
57854	Cap, oil regulator.	1		.45
57855	Packing, oil regulator cap.	1		.05
57858	Pin, cylinder bushing dowel	2		.10
57864	Pin, governor lever	1		.05
57866	Lever, governor	1		.60
57871	Ring, thrust cap retainer	1		.05
57881	Nut, lower rotor bearing clamp on rotor	1		.50
57888	Nut, lower rotor bearing clamp. .	1		.35
58032	Spring, governor valve.	1		.15
58180	Bushing, oil regulator.	1		.35
58206	Regulator, oil.	1		.05
58226	Sleeve, governor valve guide. . .	1		.35
58260	Weight, governor.	2		.85
58261	Support, governor weight.	1		
58262	Assembly, governor weight and support includes: 58260 Weight 58261 Support 66391 Pin	1		1.90
*58606	Cap Assembled, Cylinder with 58180 Bushing 57812 Pin	1	3/8	3.80
58607	Cap Assembly, complete, cylinder, includes: 2022 Pin 57854 Cap 57855 Packing 58206 Regulator 58606 Cap Assembled 69977 Bushing	1		7.00
58616	Cap, governor	1	1/2	8.85
58617	Cap Assembly, Governor, with 25061 Nipple 57864 Pin 57866 Lever 58616 Cap	1		4.00
		1	3/4	4.75

(Continued on page 38)

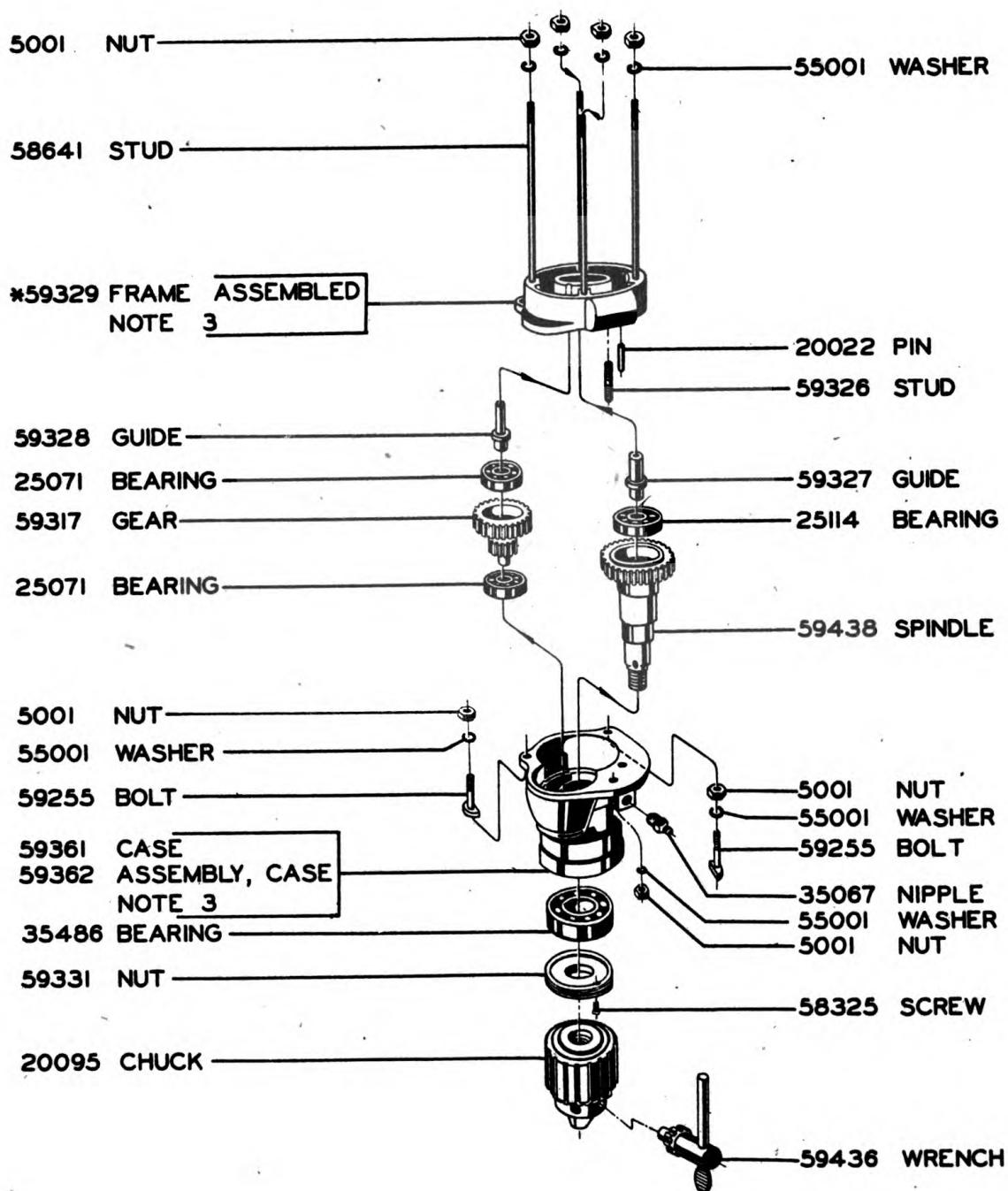
NUMERICAL PARTS LIST FOR MOTOR UNIT - Continued

Mfr's. Part No.	Nomenclature	No. of Parts Per Tool	Wt. Each in lbs.	Price Per Part
58624	Stem, Governor Support.	1		\$.45
58625	Cap, governor stem thrust	1		.70
58626	Assembly, governor stem includes: 25142 5/32" Ball 57871 Ring 58624 Stem 58625 Cap	1		1.25
58631	Gasket, governor cap.	1		.05
58632	Gasket, cylinder and cap.	1		.05
58633	Valve, governor	1		1.25
58698	Nut, adaptor lock	1		.45
59353	Cylinder.	1	1/4	7.60
64656	Plate, upper rotor bearing. . . .	1	3/8	9.50
64657	Plate, lower rotor bearing. . . .	1	3/8	7.60
64658	Bushing, cylinder	1	5/8	11.80
64659	Assembly, cylinder bushing includes: 57858 Pin 64658 Bushing	1	5/8	12.00
66391	Pin, governor weight.	2		.05
67953	Rotor	1		15.00
68768	Blade, rotor.	4		.35
69977	Bushing, governor valve	1		1.20
70587	Adaptor, for drill stand mounting	1	1-1/2	1.85

* - Sold only Assembled

Prices shown are subject to change without notice.

EXPLODED VIEW OF GEAR CASE UNIT



NOTE 3: SEE GEAR CASE UNIT MASTER PARTS LIST (Page 40)

* SOLD ONLY ASSEMBLED

NUMERICAL PARTS LIST FOR GEAR CASE UNIT

Mfr's. Part No.	Nomenclature	No. of Parts Per Tool	Wt. Each in lbs.	Price Per Part
5001	Nut, cylinder and gear case stud and bolt	7		\$.05
20022	Pin, gear case and frame dowel	1		.05
20095	Chuck, 9/16" capacity	1	1-1/2	9.00
25071	Bearing, reducing gear	2		1.25
25114	Bearing, upper spindle	1		1.15
35067	Nipple, gear case grease	1		.10
35486	Bearing, lower spindle	1	1/4	1.50
55001	Washer, cylinder and gear case stud and bolt	7		.05
58325	Screw, lower spindle bearing clamp nut tension	1		.05
58641	Stud, cylinder	4		.20
59255	Bolt, gear case	2		.15
59317	Gear, reducing	1	1/4	5.75
59326	Stud, gear case	1		.20
59327	Guide, spindle end thrust	1		1.25
59328	Guide, reducing gear	1		1.25
*59329	Frame assembled with 59326 Stud 59327 Guide 59328 Guide	1	1-1/4	8.85
59331	Nut, lower spindle bearing clamp	1	1/4	1.80
59361	Case, gear	1	1-1/4	11.75
59362	Assembly, gear case includes: 20022 Dowel pin 35067 Nipple 59361 Gear Case	1		
59436	Wrench, chuck	1	1-1/4	12.75
59438	Spindle	1	1/2	.50
			3/8	10.75

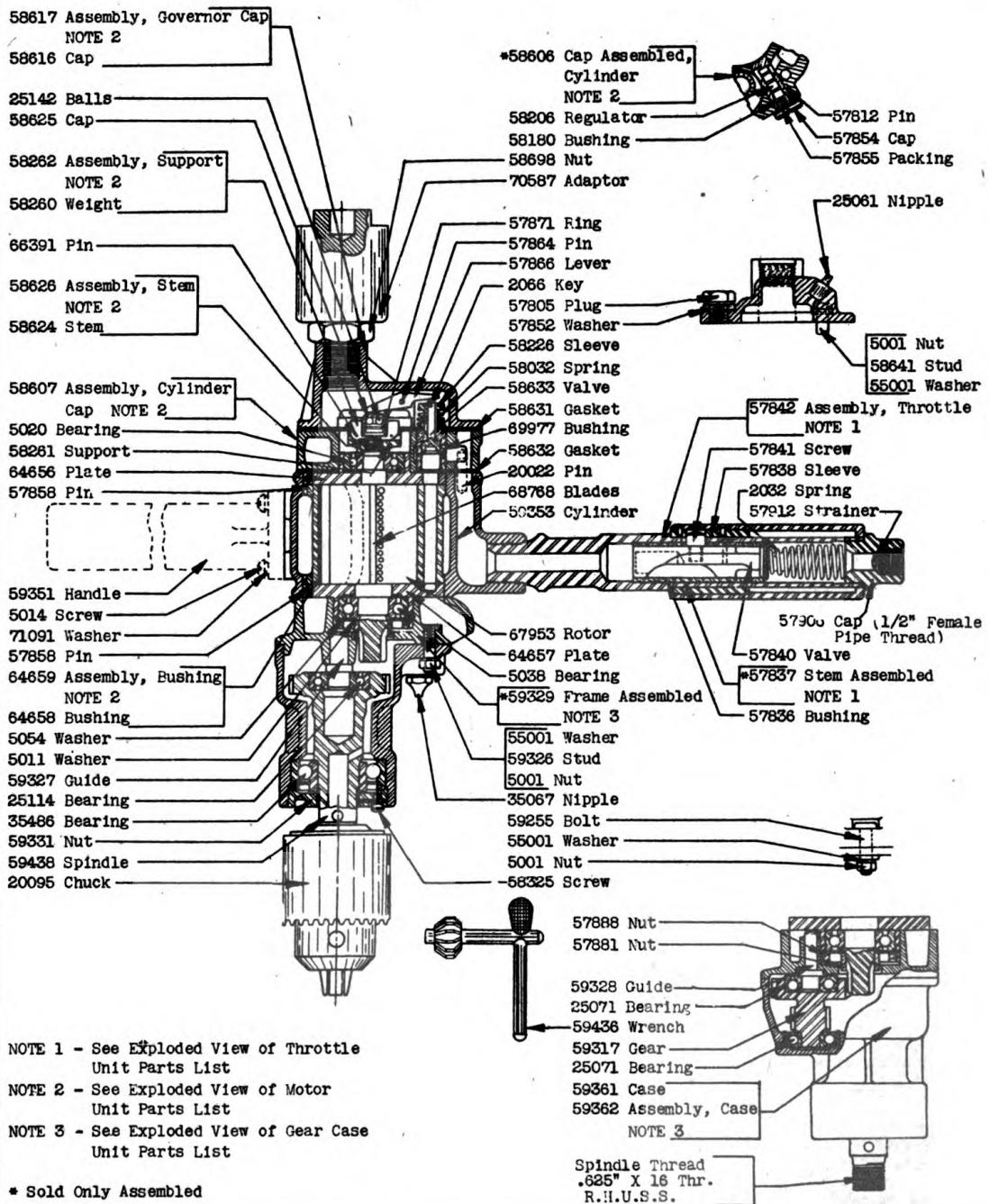
* - Sold Only Assembled

Prices shown are subject to change without notice.

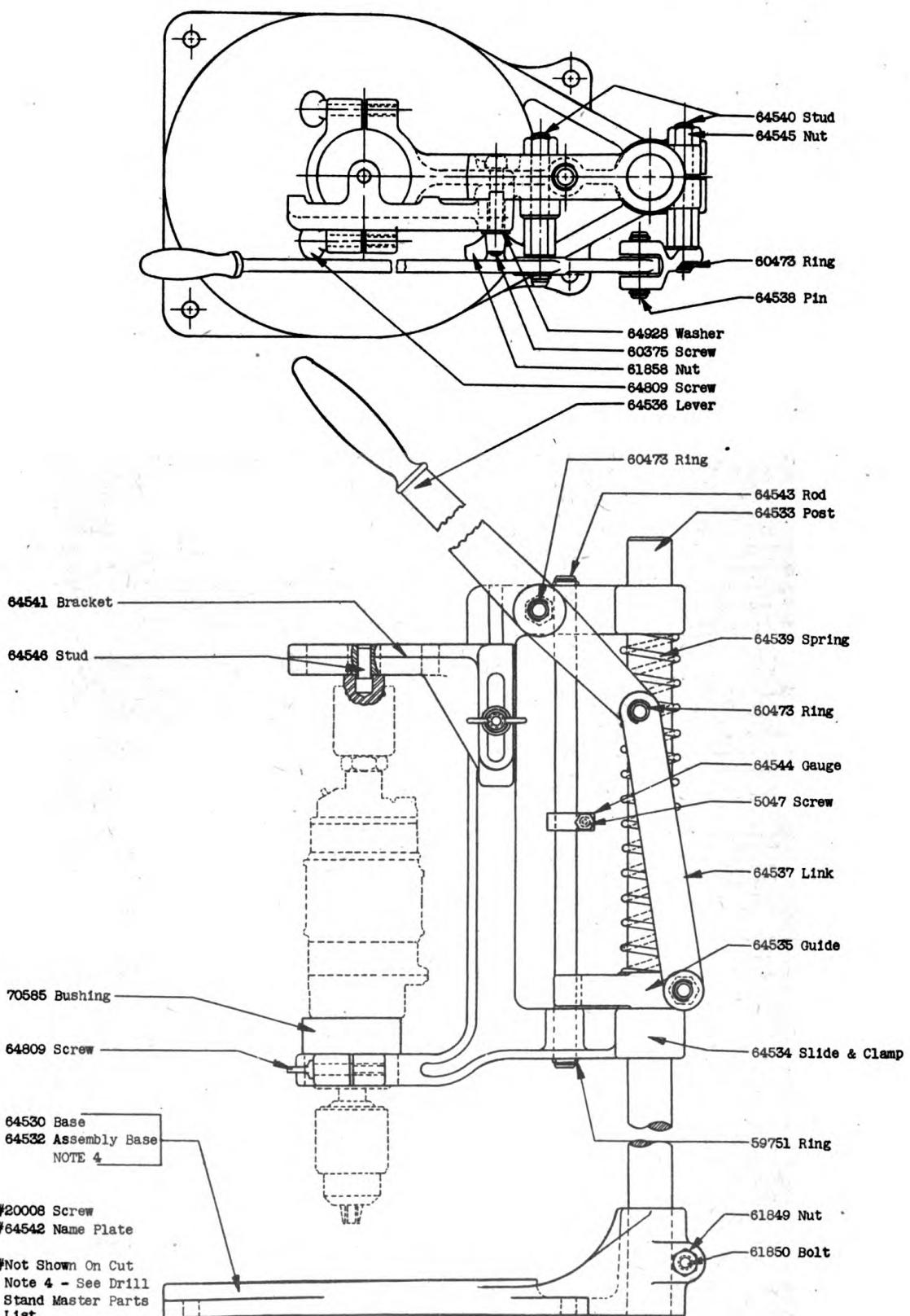


INDEPENDENT PNEUMATIC TOOL CO.
CHICAGO, ILLINOIS
NO. 253X PNEUMATIC ROTARY DRILL
MODEL NO. 4444

SPECIFY SERIAL NO. AND MODEL NO. OF TOOL WHEN ORDERING PARTS



CROSS-SECTION VIEW OF THOR NO. 26 DRILL STAND



NUMERICAL PARTS LIST FOR NO. 26 DRILL STAND

Mfr's. Part No.	Nomenclature	No. of Parts Per Tool	Wt. Each in lbs.	Price Per Part
5047	Screw, stop gauge clamp	1		\$.05
#20008	Screw, name plate	4		.05
59751	Ring, guide rod retainer.	2		.05
60375	Screw, upper support bracket clamp.	1		.20
60473	Ring, guide and lower clamp stud and connecting link pin retainer	4		.05
61849	Nut, post clamp bolt.	1		.05
61850	Bolt, post clamp.	1		.30
61858	Nut, upper bracket clamp bolt thumb.	1		.35
64530	Base, drill stand	1		8.50
64532	Assembly, base includes: 20008 Screw 61849 Nut 61850 Bolt 64530 Base 64542 Name Plate	1	11-1/2	9.00
64533	Post, drill stand	1	11-1/4	2.25
64534	Slide and Clamp, drill stand. . .	1	7-3/4	11.50
64535	Guide, Drill slide.	1	1	1.75
64536	Lever, hand	1	4	2.50
64537	Link, connecting.	1	1-1/4	.65
64538	Pin, connecting link.	1		.20
64539	Spring, slide	1	1	.60
64540	Stud, guide and lever clamp . . .	2	1/4	.60
64541	Bracket, upper support.	1	1-7/8	1.75
#64542	Plate, name	1		.10
64543	Rod, slide guide.	1	1-1/4	.75
64544	Gauge, stop	1		.50
64545	Nut, guide and lever clamp stud .	2		.05
64546	Stud, guide	1		.20
64809	Screw, lower clamp thumb.	2		.25
64928	Washer, upper support bracket clamp screw.	1		.10
70585	Bushing, slide and gear case. . .	1	7/8	3.00

- Not Shown on Cut

Prices shown are subject to change without notice.

R-15203E

MEMORANDA

